

**DIRECTORATE GENERAL NATIONAL CADET CORPS**



**STANDARD OPERATING PROCEDURE: 01/2012**

**MAINTENANCE OF MICROLIGHTS**

## **STANDARD OPERATING PROCEDURE: 01 / 2012**

### **MAINTENANCE OF MICROLIGHTS IN NCC**

#### **References:**

- (a) Standard Operating Procedure 01/2008.
- (b) IAP 1501.

#### **List of Appendices:**

- A: Format for Demand of Item.
- B: Format for calling of Quotation.
- C: List of Authorised Firms for procurement of Spares/ Repairs.
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- M: Extract of Zen Air Airframe OEM Manual.
- N: Extract of Rotax 912A Engine OEM Manual.
- P: Extract of X- Air Airframe OEM Manual.
- Q: Extract of Jabiru Engine OEM Manual.
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### **INTRODUCTION**

1. National Cadet Corps (NCC) Air Wing Flying Squadrons are equipped with Microlight aircraft for imparting flying training and instilling a sense of adventure amongst the Air Wing cadets. There are presently 45 Microlight aircraft in 50 Air Squadrons of NCC and 110 more Microlight aircraft are likely to be inducted into NCC in the near future. To enable effective utilization of these flying machines it is necessary to put in place a robust maintenance practices including provisioning, procurement and equipment accounting systems that would not only ensure timely

availability of spares and high serviceability of aircraft but also enable proper accounting of the costly spares purchased/consumed.

**AIM**

2. The aim of this SOP is to lay down guidelines for the maintenance practices of Microlight aircraft in NCC including Provisioning/Procurement of spares, their accounting and repairs.

**PROVISIONING AND PROCUREMENT OF SPARES**

3. JD Lgs (Air) at HQ DGNCC is responsible for Provisioning and Procurement of spares for the MICROLIGHT aircraft. Towards this end, the recurring requirement of spares, servicing kits, overhaul/servicing arising need to be worked out keeping in view the following:

- (a) Annual training task.
- (b) Present life of airframe/aero engine/component.
- (c) Lifting policy/servicing/overhaul periodicity specified in the relevant OEM manuals /Service Bulletins/Policy directives.
- (d) Mandatory spares/changes recommended in the relevant servicing schedules/ manuals/policy directives.
- (e) Last two years consumption data.
- (f) Float of fast moving spares/servicing kits authorized to be held at various units wherever applicable.

4. In addition to the above, non-recurring requirements/arising at units due to unserviceabilities, defects etc would also need to be consolidated and procurement action initiated.

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5. **Procurement of Spares.** In order to effectively utilize the collated data and to provision the recurring requirements, the procurement / servicing / repairs would be regulated on a Centralised Local Purchase basis. HQ DG NCC Lgs Dte is designated as the central LP agency for this purpose wherein one commissioned Officer from Lgs Air Cell would be detailed as the **Purchase Officer** for all such purchases and associated documentation / aspects. The particulars and specimen signatures of the designated Officer would be forwarded to CDA and all concerned.

(a) Requirement of spares giving Part No. (indicating whether the part pertains to Airframe or Engine) will be projected by Units to Lgs Dte (Lgs Air Cell) at HQ DGNCC as per format attached as **Appendix `A`**. The demands of each Air NCC Sqn would be serially numbered for proper linking and follow up.

(b) Lgs (Air) Cell at HQ DG NCC will check availability of stock of demanded item at their store and if available, issue the items directly to the demanding unit.

(c) Lgs (Air) Cell at HQ DG NCC will examine and compile non-recurring demands received from various Air NCC Sqns. Quotations from the OEM / supplier for items or / and services not in the annual price catalogue of the firm would be called for. The format for calling of quotations is attached as **Appendix `B`**. The price called for / submitted by the firm would be on F.O.R. basis for direct supply to the demanding unit and installation, in situ (if required). The quotations / price list would be called for only from the OEM or their authorized supplier on PAC basis. The list of these firms is given at **Appendix `C`**. In case of dealing with firms other than OEM / authorized supplier, quotations from at least three firms would be invited and only L-1 (lowest) would be accepted until valid reasons for accepting quotations other than L-1 are endorsed by the CFA. The procedure for recurring requirements worked out by Lgs (Air) would also be the same as for demands received from user units.

(d) Sanction of CFA would be obtained for the finalized price (including Taxes, Charges, installation, commissioning, etc., if any) from **`Angle of Necessity (AON)`**.

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(e) HQ DG NCC (Lgs Dte) will allot funds for centralized local purchase / repairs under code head 1/544/01 **on earmarked basis** for Air assets.

(f) The Purchase Officer would, on the basis of total financial effect obtain AON sanction and place Supply Order as per **Appendix `D`** and forward copy of the same to all concerned. Requisite funds would be earmarked for the Supply Order.

(g) On receipt of stores, DGNCC Lgs Air Stores/ the consignee Air NCC Sqm will immediately issue **`Acceptance Certificate`** duly annotated with RV (Receipt Voucher) No. and the Ledger Folio Page No. to the Firm. A copy of the same would be faxed to Lgs (Air) Cell at HQ DG NCC followed by ink signed copy by Speed Post. In case installation / commissioning is mentioned in the Supply Order, the **`Acceptance Certificate`** would be issued only after satisfactory completion of installation / commissioning by the firm for claiming the payment as well as installation / commissioning charges, if any. Fitment of all spares and consumables is to be entered in Form 700D/ Logbook/ Expense Book. COs of Air Sqms are to ensure the same. Format of **`Acceptance Certificate`** is attached as **Appendix `E`**.

(h) The firm, after dispatch of item (with certification), will prepare the bill and forward it to HQ DG NCC Lgs Air Section along with a copy of the Purchase Order and requisite documents. The Purchase Officer will obtain **CFA Sanction** on the basis of **AON Sanction** and the **actual Bill Amount**. Thereafter, he will process the bill and forward it to CDA Tigris Road.

(j) CDA Tigris Road after receipt of duly certified and countersigned bill (with requisite documents) will make payment directly to the firm.

#### **Repair of Microlights.**

6. **At Site.** The following procedure is to be adopted for repairs at site:

(a) Units will project details of repair / servicing required along with spares required giving Cat Part No. ( indicating whether the part pertains to

Airframe or Engine) to Lgs Dte (Air Section) at HQ DG NCC. The format of Report is attached as **Appendix `F`**.

(b) Lgs (Air) Section at HQ DG NCC will examine the feasibility of repair / servicing within the expertise available at the unit. In case of the required facility / expertise not being available at unit level, would forward RFQ to the firm advising the nature of defect. The firm would furnish quote for complete repairs (at site) inclusive of items required to be replaced and charges for routing their representative to the unit.

(c) Sanction of CFA would be obtained for the finalized price (including Taxes, Charges, installation, commissioning, etc., if any) from **`Angle of Necessity (AON)`**.

(d) The Purchase Officer would place Work / Repair Order as per **Appendix `D`** and forward copy of the same to all concerned. Requisite funds would be earmarked for the Work / Repair Order.

(e) The firm would carry out the repairs / servicing, certify the repairs having been carried out and offer the Microlight (after repair) for Ground and Air Test to the Commanding Officer of the user unit. If the user is satisfied (after the Air Test) then Certificate of fitness and acceptance (**Appendix `E`**) is to be signed by the user unit and handed over (two copies) to the firm's representative. A copy of the same would be faxed to Lgs (Air) Section at HQ DG NCC followed by an ink signed copy by speed post. The repair including major spares replaced is to be entered in Form (T)700D / Log Book and countersigned by the CO, Unit.

(f) The firm will prepare the bill and forward it to HQ DG NCC (Lgs Air Cell) along with a copy of the Repair Order and **Certificate of fitness and Acceptance** (received from the unit) to the Purchase Officer for claiming payment. The Purchase Officer will process the bill and forward along with requisite documents to CDA Tigris Road Delhi.

(g) CDA Tigris Road after receipt of duly certified and countersigned bill will make payment directly to the firm under intimation to Lgs (Air) Section at HQ DG NCC, and the recipient unit.

7. **At Repair Agency.** The following procedure is to be adopted for undertaking repairs at repair agency:

(a) Units will project details of repair / servicing required to Lgs Dte (Air Section) at HQ DG NCC clearly certifying that the nature of defect is such that repair at site is not feasible. The format of Report is attached as **Appendix `F`**.

(b) Lgs (Air) Section at HQ DG NCC will float RFQ to the concerned Firm for disassembly of the ML and transportation to their premises advising the nature of defect. The firm would furnish quote for disassembly and transportation clearly certifying that the repairs cannot be undertaken at site.

(c) Sanction of CFA would be obtained for disassembly and transportation of the Microlight from **`Angle of Necessity (AON)`**.

(d) The Purchase Officer would, on the basis of total financial effect place Order as per **Appendix `D`** and forward copy of the same to all concerned including NCC Liaison Cell.

(e) On receipt of the Microlight at the Firm's premises, a joint survey will be carried out by the NCC Liaison Cell, representatives from concerned unit and the Firm. The Firm will forward their quote to JD Lgs (Air) at HQ DG NCC covering repair work, transportation back to the unit and re assembly at the unit along with a copy of the survey report.

(f) Additional Sanction of CFA would be obtained for the repair work, transportation back to the unit and re assembly at the unit of the Microlight from **`Angle of Necessity (AON)`**. The Purchase Officer would, on the basis of total financial effect place Work / Repair Order as per **Appendix `D`** and forward copy of the same to all concerned including NCC Liaison Cell.

(g) On receipt of the Repair Order, the Firm will commence repair. **All the unserviceable items replaced would be returned to the NCC Liaison Cell who will ensure proper accounting of all such items. All these items will be returned to the Unit for further disposal when the Microlight is dispatched back on completion of repair.**

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(h) NCC Liaison Cell will monitor progress of repair on a daily basis and furnish report to HQ DG NCC. On completion of repair, Air Test will be carried out both by the Firm as well as NCC Pilot. On completion of successful Air Test, joint acceptance is to be carried out by the NCC Liaison Cell, representatives from concerned unit and the Firm. The repair including major spares replaced is to be entered in Form (T)700D/Log Book and countersigned by the CO, Air NCC Sqn.

(j) The Microlight thereafter will be dismantled and transported back to the unit. On receipt at the unit, it will be reassembled by the representatives of the Firm and Air Tested by the CO of the unit in their presence. The CO will satisfy himself that the repairs have been carried out as per the Order and sign the Acceptance Certificate.

(k) Preparation of Bills by the Firm and payment by CDA will be as per para 6 (e) and (f) above.

8. OEMs are to submit Annual Price List and particulars of their authorized signatory along with their specimen signatures to the Lgs (Air) Section at HQ DG NCC. The Purchase Officer would forward a copy of the same to CDA for their records. In case of non-availability / non-submission of Price List by any firm, the procedure for calling of quotations is to be resorted to.

9. All certificates / CRVs (certificate receipt vouchers) issued by the user / receiving unit are to be signed by the CO/Commissioned Officer only.

10. The Purchase Officer is to :-

(a) Place Supply / Repair / Work Order only for items / repairs / servicing on firm.

(b) Earmark funds for those purchases / Repairs / servicing.

(c) Obtain sanction of CFA.

(d) Progress Invoices for payment.

11. The procurement / repair of commonly available items / low value items / non-proprietary items viz. Batteries, Araldite, measuring cans, chamois leather, etc., are to be procured / repaired locally by respective Air NCC Sqns from the funds



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allotted to each Directorate under related code head so as to obviate the air assets being on ground / unserviceable for trivial items and avoidable procedural delays through central provisioning. The bills for these purchases would be cleared through respective CsDA. Similarly the requirement of items pertaining to other code heads would be procured under the respective code head from the funds allotted to the state Dtes or a Statement of Case would be forwarded through concerned Dte to respective section at HQ DG NCC for consideration.

12. The duties and responsibility of all agencies are listed at **Appendix `G`**.

### EQUIPMENT ACCOUNTING

13. **Issue from DGNCC Lgs Air Stores.** Issues from DGNCC Lgs Air Stores will be made only on allocation from JD Lgs Air. Before effecting issue, the condition and life of the item is to be checked and item with sufficient life is to be issued. DGNCC Lgs Air Stores will raise an issue voucher as per **Appendix `H`** annotating all the relevant details. Each issue voucher will be allotted an EX/IV Number from the manifold maintained for the purpose. The numbering will start from 01 Apr and end on 31 Mar of each year (Financial year wise). Issue Vouchers will be raised in five copies. The distribution will be as under:

- (a) 1<sup>st</sup> copy: Advance copy from DGNCC Lgs Air Stores to the Air Sqn by post. To be returned to DGNCC Lgs Air Stores by the Sqn on receipt of item annotating EX/RV No. (External Receipt Voucher No.).
- (b) 2<sup>nd</sup> copy: To travel along with the item.
- (c) 3<sup>rd</sup> copy: DGNCC Lgs Air Stores Audit Copy.
- (d) 4<sup>th</sup> copy: Accounting copy for posting on Ledger. To be maintained at DGNCC Lgs Air Stores for subsequent audit.
- (e) 5<sup>th</sup> copy: LAO Air Sqn copy.

14. Each issue will be meticulously entered in the Ledger prior to despatch of the item. The Store in-charge will certify and sign on the Issue Voucher stating that

proper Ledger entries have been made. JD Lgs Air will carry out Snap Checks of store (at least ten items) once in three months to ensure that physical stock tallies with the Ledger Balances. Records of all Snap Checks are to be maintained in a separate folder.

**Receipt at Air Sqns.**

15. **From DGNCC Lgs Air Stores.** Whenever an item is received at an Air Sqn from the DGNCC Lgs Air Stores, the same is to be brought on charge by annotating an EX/RV No. (External Receipt Voucher No.) to the Issue Voucher raised by DGNCC Lgs Air Stores. The numbering will start from 01 Apr and end on 31 Mar of each year (Financial year wise).

16. **From OEM/Other Agencies.** Whenever an item is received at an Air Sqn from OEM/ Other agencies, the same is to be brought on charge by raising a CRV (Certified Receipt Voucher) as per **Appendix `J`** annotating all the relevant details. Each CRV will be allotted an EX/RV/CRV Number from the manifold maintained for the purpose. The numbering will start from 01 Apr and end on 31 Mar of each year (Financial year wise). CRVs will be raised in six copies. The distribution will be as under:

(a) 1<sup>st</sup> copy: To be retained at Air Sqn for Ledger action.

(b) 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> copy: To be forwarded to the Firm with EX/RV/CRV No. The Firm will retain 2<sup>nd</sup> copy. The 3<sup>rd</sup> and 4<sup>th</sup> copies will be attached along with bills and other documents and forwarded to HQ DG NCC for payment action. On accordance of CFA sanction at HQ DG NCC, 3<sup>RD</sup> copy will be passed to CDA along with Bills for payment action. 4<sup>th</sup> copy will be retained at HQ DG NCC for record purpose.

(c) 5<sup>th</sup> copy: To be sent by the Air Sqn to DGNCC Lgs Air Stores for record/monitoring purpose.

(d) 6<sup>th</sup> copy: LAO Air Sqn copy.

17. The Ledger balance is to be updated before stacking/binning the item in store. The Ledger should indicate the location of the item in store for easy access and handling.

**Transactions at Air Sqns.**

18. **Internal Issues.** Whenever a technician requires an item from store, a demand for the same is to be raised by the Inventory Holder of the Sqn, specifically detailed by the CO (Should be of the rank Sgt and above). The format of Demand is placed at **Appendix `K`**.

19. Each demand is to be serially numbered during the Financial Year and raised in three copies. The third copy will be retained as the Pad copy.

20. First and Second copies are to be submitted to the Store Keeper who will annotate an IN/IV No.(Internal Issue Voucher) before issuing the demanded items to the Inventory Holder. The second copy will be returned along with the item. The Inventory Holder will annotate the IN/IV No. on the Pad copy of the voucher from the second copy for record purpose.

21. The Store Keeper will use the first copy to adjust the Ledger Balance and maintain it in a separate folder for records.

22. **Internal Returns.** Whenever an item becomes unserviceable, the inventory holder will prepare a Return Voucher as per format placed at **Appendix `L`** annotating all relevant details.

23. The Return Voucher will be raised in three copies. The third copy will be retained as the Pad copy.

24. First and Second copies are to be submitted to the Store Keeper along with the unserviceable item who will annotate an IN/RV No.(Internal Return Voucher) from the Manifold maintained for the purpose. The numbering will start from 01 Apr and end on 31 Mar of each year (Financial year wise). The second copy will be returned to the Inventory Holder duly signed by the Store Keeper as having received the unserviceable item. Inventory Holder will annotate the IN/RV No. on the Pad copy of the voucher from the second copy for record purpose.

25. The Store Keeper will maintain a separate Ledger for record of unserviceable items. Items meant for DI /PWR, when returned as unserviceable will be accounted

for as EACH as well WEIGHT. These items are repairable/valuable/attractive in nature and therefore need higher inventory control. All other items on return will be converted to their basic raw materials and accounted for only in weight. (for eg. Metal Ferrous, Rubber, Leather etc.). He will use the first copy to update the Ledger Balance and maintain it in a separate folder for records. All items becoming unserviceable (other than consumables/expendables) are to be returned to store prior to issue of serviceable replacements. He will also ensure that the unserviceable items are kept in a separate store and not along with serviceable stock.

26. All unserviceable items accumulated at Air Sqns other than those on DI/PWR action will be dispatched to their respective Dte at least once in three months. Each Dte will send a quarterly return of the unserviceable/salvage stock held with them. Directorates are to conduct a BOO annually in the month of April for auctioning the items and deposit the proceeds in govt. treasury through an MRO. A copy of the board proceedings and MRO are to be sent to HQ DGNCC Lgs Air Cell for information. All unserviceable arising at Air Sqns on DI /PWR action will be dispatched to NCCLC as per SOP on DI/PWR.

27. The Store Keeper will make a list of salvage items before transfer to the Dte, obtain signature of the recipient and update his Ledger for salvage items accordingly. The list will be made in duplicate. One copy is to be retained by the Store Keeper and the second copy maintained at the concerned Dte.

## MAINTENANCE ACTIVITIES

### Inspection Procedures and Periodicity

28. **Zen Air CH 701 Airframe.** As per OEM manual for STOL Zen Air CH 701, prescribed periodicity between two consecutive servicing (of similar types) is either 25hrs or 100hrs only. An extract of the relevant pages of the manual is attached as **Appendix `M`**. There is no separate 50hrs servicing envisaged on the Zenair CH 701 aircraft. Accordingly, there would be three 25 hrs servicing between 0-100 AF hrs and the inspection carried out at 50 AF Hrs is nothing but a repeat 25 hrs servicing. There is no separate inspection/ servicing (200/ 400/600/1000/1500 hrs) required to be carried out on the Zen Air CH 701 aircraft and these are nothing but a repeat 100 hrs servicing.

29. The following items are to be inspected for their condition during every 25 & 100 hrs servicing and replaced wherever necessary:

- (a) Bungee cord
- (b) Fuel Filter
- (c) Cushion Pad set.
- (d) Nose Wheel Spacer
- (e) Main Wheel Spacer
- (f) Fuel Hose from filter to drain valve

30. The basic maintenance philosophy is to carry out preventive maintenance checks every 25hrs and take corrective action based on condition. Items are to be changed 'On Condition' and not 'Irrespective of Condition.' If it is subsequently felt that certain items need to be changed, based on either failure data or feedback from operating units, the same will be introduced as an 'Out of Phase Servicing' event rather than as a new servicing cycle. Such requirements would be communicated separately to all Air NCC Sqns by HQ DG NCC.

31. **Rotax 912A Engine.** In respect of Rotax engines, periodic inspections are to be performed at First 25hrs followed by 50, 100, 200, 600hrs intervals in accordance with Chap 05-20-00 Section 5.1 of Rotax 912 Maintenance Manual of October 2009. An extract of the relevant pages of the manual is attached as **Appendix `N`**.

32. **X-Air airframe.** In respect of the X-Air airframe, the servicing periodicities specified by OEM are every 50h/1 month, every 150h/6months, every 300 h/1year, every 600 h/2years and every 900h/5years. An extract of the relevant pages of the manual is attached as **Appendix `P`**.

33. **Jabiru engines.** In respect of the Jabiru engines, the periodicity to be followed is initial 25 hrs check followed by every 50hrs , every 100hrs and 200hrs. The 200hrs check is to be treated as a 100hrs check with the addition of a fly wheel bolt check. An extract of the relevant pages of the manual is attached as **Appendix `Q`**.

34. **Defect Investigation Procedures.** Despite an elaborate preventive maintenance program being followed, failures/defects do occur during the service life of a component leading to unserviceabilities/ premature withdrawal. In the interest of flight safety and to improve the serviceability and reliability, it is

necessary that any such defect is immediately reported on appropriate form, investigated and prompt remedial measures instituted to prevent recurrence. This is particularly important in respect of component/system failures leading to accidents and incidents. A detailed SOP on the reporting, investigation and subsequent monitoring of defects both in respect of airframe and aero engine systems is placed at **Appendix `R`**.

35. This SOP is applicable with immediate effect. All SOPs / instructions issued earlier on the subject stand cancelled.

36. Any deviation to this procedure will be under the instructions of undersigned only.

37. This has the approval of DG NCC.

(A P Tripathi)  
Brig  
DDG (Igs)  
For DG NCC

Date: Aug 2012

**Distribution:**

CDA Tigris Road, Delhi

M/S AASAA, Bangalore

M/S Varman Aviation Pvt. Ltd, Bangalore

M/S Velocity Max Pvt. Ltd., New Delhi

M/S Raj Hamsa Ultra lights Pvt. Ltd., Bangalore

All NCC Dtes

All Air NCC Sqns

**Internal Copy to:**

All DDGs of HQ DG NCC

FORMAT FOR DEMAND OF ITEM

Demand Control No: DCN-0001/2008/ML or GL/AOG or URGENT/1 (RAJ)/---- (date)

SI No.	Part No.	Description	Denom of Qty	Qty Reqd	A/C No.	Airframe / Engine	Remarks (Justification / reason, etc)

- Note:
1. Separate form to be raised for AOG / Urgent demands.
  2. All demands to be signed by CO.

Appendix 'B' refers to  
para 5(C) of SOP 01/2012

**FORMAT FOR CALLING OF QUOTATION**

Telefax: 011- 2610 3976

HQ DG NCC  
Ministry of Defence  
West Block – IV  
RK Puram  
New Delhi – 110 066  
10 July 2012

17653/1/T/DGNCC/Lgs (Air)

M/S------(Attn: Mr-----)

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**REQUEST FOR QUOTE:-----**

Dear Sir,

1. No. 1 (TN) Chennai Air NCC Sqn requires items listed in the 'Schedule of Requirement' attached for their MICROLIGHT aircraft No.----- make Zen-Air / X-Air.
2. A budgetary quote specifying all elements in terms of percentage as well as financial value individually and total (as per the format), if provided, would enable us to process the case in totality on a fast track.
3. It may be appreciated that NCC being under Government of India (MoD) has to abide to certain laid down rules / procedures. Therefore, prior sanction of the Competent Financial Authority is required. The case can be processed only if all elements pertaining to the purchase e.g. warranty, lead time, price, taxes, other charges (if any), etc. are clearly spelt out rather than merely mentioning 'Extra' or 'As applicable'.
4. An early reply by return FAX would be highly appreciated.

Sd/-  
JD Lgs (Air)  
For DG NCC

Copy to:

Concerned demanding unit.

Concerned NCC Dte.



**SCHEDULE OF REQUIREMENT FOR CALLING OF QUOTATION : MICROLIGHT NO.----- ZEN-AIR / X-AIR**

**No. 1 (TN) Air NCC Sqn : LTR REF 17653/1/T/DGNCC/Lgs (Air) 10 July 2008**

SI No	Part No.	Description	Quantity		Unit / Basic Price in Indian Rupees	ED	
			Denomination	Required		In %	In Rs.
(a)	(b)	⊕	(d)	(e)	(f)	(g)	(h)

Sales Tax	VAT		SC/MST---		Any other Taxes		Any other charges (specify)		Total Amount In Indian Rupees	
	In %	In Rs.	In %	In Rs.	In %	In Rs.	In %	In Rs.		
(j)	(k)	(i)	(m)	(n)	(o)	(p)	(q)	⊕	(s)	(t)

**Note:** 1. All Taxes/charges/levies like ED, ST, SC, CST should be mentioned in % as well as in Indian Rupees.

2. Total amount be mentioned in figures as well as words.

3. Delivery of items would at No.1 (TN) Air NCC Sqn, Chennai. Hence, quotation should on F.O.R. basis.

4. Charges for installation / commissioning, if requested or opined by your firm (and accepted), be specified in the quotation.

5. No charges other than specifically mentioned in the quotation and accepted in the Supply Order would be admissible.

6. Lead time after placement of order -----.

**Signature of JD Lgs (Air) HQ DG NCC with Stamp & Date**

**Signature of Authorised signatory of the firm with Stamp & Date**

**Appendix `C` refers to  
para 5 (c) of SOP 01/2012**

**LIST OF AUTHORISED FIRMS FOR PROCUREMENT OF  
SPARES / REPAIRS : MICROLIGHTS**

Sl No.	Type of MICROLIGHT	Airframe / Engine & Type	Firm
1	ZEN AIR	AIRFRAME	M/S AASAA (Agni Aero Sprts Adventure Academy (P) Ltd., Hangar # 2, Jakkur Aerodrome, 12 <sup>th</sup> KM, Bellary Road, BANGALORE-560 064 Tele: 080-28565574 080-28560060 FAX:080-28569152 e-mail:agniaviators@yahoo.com
2	ZEN AIR	ENGINE (ROTAX 912A)	M/S VARMAN AVIATION PVT. LTD. Aviation Complex, 16-17, Road No. 7, EPIP White Field, Bangalore-560066 Tele:044-28412536 044-28412655 FAX:044-28413559 e-mail:varman@airtelmail.in
3	X – AIR	AIRFRAME & ENGINE (JABIRU2200)	M/S Velocity Max Aviation and Targets LLP E-177, Greater Kailash- II New Delhi-110048 Tele:011-41082208 Mob:9958579396 9810432621 e-mail:velocitymax1@yahoo.com <hr/> M/S RAJHAMSA ULTRALIGHTS PVT LTD. # 40 Goshala Road, P.O. Mahadevpura, Bangalore-560048 Tele:080-28516937 080-65965835 FAX:080-28518485 e-mail:rajhamsa@X-air.in

Appendix `D' refers to  
para 5 (f) of SOP 01/2012

FORMAT FOR SUPPLY ORDER

Tele: 011-  
Fax:011-

HQ DG NCC  
Min of Defence  
West Block-4  
R K Puram,  
New Delhi – 66

3003/-----

09 May 2012

M/S----- (Attn: Mr-----)

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PURCHASE ORDER / ACCEPTANCE OF TENDER No. ----- / 2012

Dear Sir,

1. It is hereby communicated that your quotation vide letter No. ----- dated ----- / as per your price catalogue has been accepted for items as per the attached Appendix, with standard terms and conditions mentioned herein.
2. **Specification:** As per OEM / certified by DGCA or equivalent authority.
3. **Inspection Authority:** CO receiving unit duly supported by firm's certification.
4. **Place of Inspection:** At Consignee's premises.
5. **Identification & Packing Instruction:** The stores shall be securely packed to avoid loss or damage during transit and for storage without any additional cost to the Government.
6. **Mode of Despatch:** The stores shall be dispatched to the Consignee by the supplier on his own arrangement.

7. **Terms of Delivery:** F. O. R. Destination:----- Air NCC Sqn, -----  
(place).
8. **Delivery Schedule: (The essence of the contract):**Immediate / In month from  
the date of this Supply Order (as the case may be).
9. **Failure & Termination:** If the Contractor fails to deliver the stores or any  
installment thereof within the fixed for such delivery or any time repudiates the  
contract before the expiry of such period , the purchaser may without prejudice to  
the right of the purchaser to recover damages for breach of the contract .
10. **Option Clause:** The purchaser reserves the right to increase or decrease the  
contracted quantity upto 50% that may be ordered at the same rates and on same  
terms & conditions at any time during the currency of the contract.
11. **Paying Officer:** Controller of Defence Accounts (CDA), Tigris Road, -Delhi.
12. **Code Head:** Major Head -  
  
Minor Head –
13. **Warranty / Guarantee:** The contractor / seller hereby will submit a certificate  
declaring that the articles / services sold / supplied / rendered to the purchaser  
under this contract shall be of the best quality and workmanship and new in all  
respects and shall be strictly in accordance with the specification and particulars  
contained / mentioned in contract. The contractor / seller hereby guarantees that  
the said goods / stores / articles would continue to the description and quality  
aforesaid for a period of thirteen months, from the date of delivery of the said goods  
/ stores / articles to the purchaser, and will rectify any defect or defects free of cost  
during aforesaid warranty period.
14. **Terms of Payment:** Within 30 days of dispatch of materials / completion  
of installation / repairs on submission of following documents:-
- (a) Contractors bill
  - (b) Original Supply Order
15. **Arbitration:** All disputes, differences or questions between the parties prior to  
touching the subject

16. **Jurisdiction of Courts:** The courts of the place from where the acceptance of tender has been issued shall alone have the jurisdiction to decide any dispute arising out of or in respect of the contract.

17. This has the concurrence of ----- (Designation) as the Competent Financial Authority (CFA) vide ----- dated ----- and funds for this commitment have been booked under the relevant code head at Sl No. ----- of Budgetary Control Register.

Encl: Appendix to Purchase Order

**Signature of Purchase Officer**

## APPENDIX TO PURCHASE ORDER No. ----- / 2012 DATED ----- May 2012

MICROLIGHT NO.-----ZEN-AIR / X-AIR No. 1 (TN) Air NCC Sqn : LTR REF 3003/-----  
09 May 2012

Sl No	Part No.	Description	Quantity		Unit / Basic Price in Indian Rupees	ED	
			Denomination	Required		In %	In Rs.
(a)	(b)	⊙	(d)	(e)	(f)	(g)	(h)

In %	Sales Tax		VAT		SC/MST---		Any other Taxes		Any other charges (specify)		Total Amount In Indian Rupees
	In Rs.	In %	In Rs.	In %	In Rs.	In %	In Rs.	In %	In Rs.	In Rs.	
(j)	(k)	(i)	(m)	(n)	(o)	(p)	(q)	⊙	(s)	(t)	

**Note:** 1. Total Amount indicated above is all inclusive.

2. Delivery of items would at No.----- (consignee unit's name & place)

3. Installation / commissioning is to be / not to be undertaken by the firm at site. Charges included above. (to be deleted by Purchase Officer, whichever not applicable).

4. No charges other than specifically mentioned in the quotation and accepted in this Supply Order would be admissible.

Delivery / Installation is to be completed by -----.

Signature of Purchase Officer with Stamp & Date

Appendix `E' refers to  
para 5 (g) of SOP 01/2012

**FORMAT FOR ACCEPTANCE CERTIFICATE**

**ACCEPTANCE CERTIFICATE**

1. This is to certify that the following items / quantity ordered vide HQ DG NCC **Supply Order** No.----- vide 3003/----- dated ----- have been supplied by M/S ----- . The items is/are new and serviceable. The same is/are accepted and have been brought on charge vide RV No.----- dated ----- and reflected on Ledger Folio No.-----Page No.-----.

Sl No	Part No.	Description	Qty Ordered	Qty Supplied	Remarks

---

2. This is to certify that the following items / quantity ordered for **supply and installation** vide HQ DG NCC Supply / Work Order No. ----- vide 3003/----- dated ----- have been supplied and installed by M/S ----- satisfactorily. The same is/are accepted and have been brought on charge vide RV No.----- dated -----.

Sl No	Part No.	Description	Qty Ordered	Qty Installed	Remarks

---

**23**

3. This is to certify that the following repairs ordered vide HQ  
DG NCC Repair Order No.----- vide 3003/----- dated -----  
- have been satisfactorily completed by M/S -----.

Sl No	Part No./ ML No.	Description of Defect	Rectification done by	Remarks

**Sign with particulars of**

**Collected by**

**Firm's Technician**

**Commanding Officer**



FORMAT FOR REPORT FOR REPAIR REQUISITION

DEFECT / SURVEY REPORT

MICROLTE ZEN-AIR / X-AIR NO. ----- UNIT -----

DEMAND NO. -----

Sl No	Exact Fault / Defect	Suggested Repair work to rectify the fault	Items that need to be replaced	Remarks
Details of survey carried out with cost estimation, name and address of the firm (separate for engine and Airframe).				
<u>Prepared by</u>		<u>Sign of MWO/WO/JWO i/c</u>		<u>Recommendation of Commanding Officer</u>

DUTIES AND RESPONSIBILITIES

RESPONSIBILITIES OF AIR NCC SQN

1. To forward demand for spares / repair / servicing requirement of ML with part No. / Reference No. as per catalogue pertaining to Airframe / engine etc. and / or details of defects for repair to DG NCC Lgs (Air) as per **Appendices `A' and `F'**.
2. **In case of Supply of item**, to issue Acceptance certificate signed by the commanding Officer (as per **Appendix `E'**) on receipt of store to the firm for claiming balance 5 % payment. An ink signed copy is to be faxed immediately to JD Lgs (Air) at HQ DG NCC.
3. **In case of Supply and / or installation / commissioning** as mentioned in the supply order, the Acceptance Certificate (**Appendix `E'**) would only be issued by the unit to the firm after satisfactory completion of installation / commissioning for claiming balance 5% of the payment as well as installation / commissioning charges.
4. **In case of repair**, to issue Acceptance certificate signed by the commanding Officer (as per **Appendix `E'**) on receipt of store to the firm on satisfactory completion of repairs for claiming balance 100 % payment. An ink signed copy is to be faxed immediately to JD Lgs (Air) at HQ DG NCC .
5. To resort to LP / repair of commonly available items / low value items / non-proprietary items by inviting quotations as per LP procedure.
6. To clear the bills of LP at unit level from the funds allotted to their respective Dte and ensure payment through respective CsDA.
7. To BOC and account for all the items received / purchased / repaired and ensure proper storage till their utilization.

**RESPONSIBILITIES OF OIC NCC LIAISON CELL, BANGALORE**

1. The NCC Liaison Cell, Bangalore will function under the administrative control of NCC Dte Kar & Goa and functional control of HQ DG NCC (DDG Lgs). The duties and responsibilities of OIC Liaison Cell are as under:

- (a) Co ordination and monitoring of all Purchase Orders placed by HQ DG NCC on the Firms to ensure prompt supplies.
- (b) Carry out price negotiation against quotes received from Firms as and when directed by HQ DG NCC.
- (c) Defect investigation and analysis of all accidented, unserviceable and prematurely withdrawn items sent to the Firms by Air NCC Sqns.
- (d) Conduct BOO for inspection of all MLs and engines sent to the Firms for major repairs/ overhaul. The ML/ Engine is to be thoroughly inspected, condition of all major components checked and recorded before handing over to the Firm. Raise Inspection Proforma and forward to HQ DG NCC, duly filled along with the proceedings of BOO.
- (d) Monitor progress of major repairs, servicing and overhaul of MLs/ Engines on a daily basis and give feedback to HQ DG NCC.
- (e) Liaise with concerned Air NCC Sqn, Dte and HQ DG NCC for prompt execution of in-situ repairs by Firm's representative immediately on placement of Orders.
- (f) On completion of repairs, conduct BOO for acceptance checks. Ensure return of all unserviceable components by the Firm which are replaced with new. All such components are to be properly accounted for and returned to the parent Air NCC Sqn for subsequent disposal action.
- (g) Implementation of Modification compliance and various techno logistics issues.
- (h) Conduct fort nightly review meetings with the Firms on product support monitoring and forward reports to HQ DG NCC.

**RESPONSIBILITIES OF NCC DTEs**

1. To accord sanction to Air NCC Sqns under their Dte for LP / repair of commonly available items / low value items / non-proprietary items viz. Batteries, Araldite, measuring cans, chamois leather, etc. so as to obviate the air assets being on ground / unserviceable for trivial items and avoidable procedural delays through central provisioning. The bills for these purchases would be cleared through respective CsDA
2. To allot funds to Air NCC Sqns under their Dte for LP / repair of commonly available items / low value items / non-proprietary items.
3. To monitor clearance of bills pertaining to LP resorted to by Air NCC Sqns under their Dte.
4. To monitor expeditious issue of Acceptance Certificate by Air NCC Sqns under their Dte for items received / Repair / servicing completed against centralized LP Order placed by JD Lgs (Air).

RESPONSIBILITIES OF LGS (AIR) AT HQ DG NCC

1. To collate recurring requirements as per consumption pattern / advice by OEM or supplier as well as examine demands received from various Air NCC Sqns.
2. To call for quotation from the OEM / supplier for repair / demanded items on approved format (**as per Appendix 'B'**). The price called for / submitted by the firm will be on FOR for direct supply to the demanding unit and installation in situ (if required). In case the required item is listed in the Annual Price List of the firm calling of quotation would be dispensed with.
3. To carry out price negotiation, if considered necessary, through a BOO.
4. To obtain approval of CFA for the finalized price (including taxes, charges, installation, commissioning etc. if any) and to place appropriate supply / work / repair order on the concerned firm / OEM for procurement / taking up rectification for which quotation has been already received from the firm.
5. Lgs (Air) will carry out follow up action with Lgs B-2 for fund allotment on earmarked basis under code head 01/544/01 for air assets.
6. To monitor the fund allotted under code head 01/544/01 and forecast further demand of funds wherever necessary.
7. To obtain CFA sanction for all purchase / repair / work prior to placement of order.
8. To process the bill for payment to the firm through CDA.

**Refers to para 13 of SOP 01/2012**

TO BE FILLED BY CONSIGNEE		<u><b>EXTERNAL ISSUE AND RECEIPT VOUCHER</b></u>				TO BE FILLED BY CONSIGNOR	
ACCOUNTING UNIT.....  RECEIPT VOUCHER NO .....  DATE OF RECEIPT.....  PERIOD .....		NAME AND ADDRESS OF CONSIGNEE		NAME AND ADDRESS OF CONSIGNOR		MODE OF DESPATCH.....  ISSUE VOUCHER NO.....  DATE .....  PERIOD .....  DESPATCH DETAILS.....	
UNIT/AGENCY.....  ADDRESS..... .....		UNIT.....  ADDRESS..... .....		PERIOD .....  DESPATCH DETAILS.....			
PART NO	DESCRIPTION	DOQ	QTY ISSUED	CASE MARKING	RATE	VALUE	REMARKS
PACKED BY CONSIGNOR		UNPACKED AND CHECKED BY		ENTERED ON LEDGER CONSIGNEE			
INITIALS	DATE	INITIALS	DATE	INITIALS	DATE		

<b>Signature</b>	<b>Rank</b>	<b>Officer Issuing Equipment</b>	<b>Signature</b>	<b>Rank</b>	<b>Officer Receiving Equipment</b>
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**Appendix 'J'**  
**Refers to para 16 of SOP 01/2012**

TO BE FILLED BY ONSIGNEE			<b><u>CERTIFICATE RECEIPT VOUCHER</u></b>				
ACCOUNTING UNIT..... RECEIPT VOUCHER NO ..... DATE OF RECEIPT..... PERIOD ..... MODE OF RECEIPT.....			NAME AND ADDRESS OF CONSIGNEE		NAME AND ADDRESS OF CONSIGNOR		
UNIT/AGENCY..... ADDRESS..... .....			UNIT..... ADDRESS..... .....				
PART NO	DESCRIPTION	DOQ	QTY RECEIVED	CASE MARKING	RATE	VALUE	REMARKS
RECEIVED BY CONSIGNEE		UNPACKED AND CHECKED BY		ENTERED ON LEDGER CONSIGNEE			
INITIALS	DATE	INITIALS	DATE	INITIALS	DATE		

**Signature**                      **Rank**                      **Officer Receiving**  
**Equipment**

**Refers to para 18 of SOP 01/2012**

**INTERNAL DEMAND AND ISSUE VOUCHER**

Demand SI No.....Date ..... Internal Voucher No.....

Flt/Sec.....Unit.....Financial Year .....

Ref/Part No	Section.....  Description	DOQ	Quantity		Posted	Remarks
			Demanded	Supplied		

Inv Holder/Sec Cdr Demanding

Inv Holder/Sec Cdr Receiving

Issuing Store Keeper		Entered on SSRC	
Initial	Date	Initial	Date



**Refers to para 22 of SOP 01/2012**

**INTERNAL RETURN AND RECEIPT VOUCHER**

Return SI No.....Date ..... Internal Return Voucher No.....

Flt/Sec.....Unit.....Financial Year .....

Ref/Part No	Section.....  Description	DOQ	Quantity		Posted	Remarks
			Returned	Category		

Inv Holder/Sec Cdr Returning

Receiving Store Keeper		Entered on Ledger	
Initial	Date	Initial	Date

Section 7

**SERVICE AND MAINTENANCE**

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**CARE OF YOUR AIRCRAFT:**

Always handle the aircraft with care. Do not push on any control surface ( this include the stabilizer).To push the tail down, lift the prop hub or push down on the rear fuselage. To move the aircraft, do not push or pull at the centre of the struts, as the struts are inappropriate for safe flying . Pushing or pulling is acceptable on the gear and at the bottom and top of the struts ( close to their attachment points). In all circumstances, follow all safety precautions pertaining to aircraft, especially around the propeller area.

As the STOL CH 701 is an all metal aircraft built from high Strength aviation grade aluminum alloys which have good corrosion resistant characteristics, little care to the airframe is required, even when stored outside. Polyurethane paint will keep the high gloss for many years when sponged with water. A cup of dish water liquid in a pail of water will help remove unwanted dirt. Always rinse thoroughly with fresh water after washing.

<p><b>MAINTENANCE PROGRAM</b></p>
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The following maintenance program outlines the minimal maintenance which must be followed to keep the aircraft in good flying condition. The suggested time interval of 25 hour does not in any sense eliminate the need for routine maintenance before and after each flight. Maintenance is part of the pilot's responsibilities: the pilot should be assured that the aircraft is airworthy at all times. The recommended 25 and 100 hour maintenance checks are designed to cover areas frequently neglected in the quicker preflight inspection, and serve only as a useful indication of the required maintenance.

Record all maintenance and repairs in the Aircraft Log Book.

Aircraft servicing and maintenance should be performed by a qualified individual. For spare or replacement airframe parts, use genuine Zen Air parts to guarantee long life and durability. Use only genuine engine manufacturer parts on the engine. Contact your Zen Air dealer or the manufacturer for all your service,maintenance and parts requirements.

<b>EVERY 25 HOURS</b>
-----------------------

Check the general condition of the STOL CH 701, and in particular the following:

**GENERAL:** Verify that no cables are chafed, check for proper anchorage and attachment of all items (fuel, coolant & oil lines, electrics, etc.). Verify that all fasteners and pins have the required “safety”.

**CONTROLS:** Check for rust on steel parts (clean and repaint as required). Lubricate all moving parts (hinges, control Attachments, bearing, etc.). Verify that all controls operate smoothly and that they are firmly attached.

**LANDING GEAR:** Inspect nose gear stops, bungee, control and inspect the main spring, wheel forks and axles.

**CABIN INTERIOR:** Clean with household cleaners according to the materials. Soap or detergent and water is not recommended for cleaning the upholstery since they could remove some of fire retardant with which the seats may have been treated.

**WINDSHIELD AND WINDOWS:** The windshield is a single piece of Polycarbonate plastic, highly resistant to impacts. Clean with “windex” as the polycarbonate will craze with most chemicals. DO NOT USE gasoline, alcohol, oil, lacquer, benzene, acetone, paint, thinner, etc. The optional protective windshield cover will protect it from dust, sand and curious onlookers.

**BATTERY:** Check fluid level, especially in hot weather. Maintain the level at the top level mark by adding distilled water as required (read instructions located on battery). DO NOT OVERFILL as spillage may corrode the airframe.

**WOOD PROPELLER:** Wood propellers are inexpensive and dampen vibrations efficiently, but maintenance is required to keep the propeller in proper condition. The prop may need periodic re-varnishing. Check the tips and leading edges for damage. Look for nicks and cracks. Inspect spinner, bolts (tight and secured) . Wiping the propeller with an oily cloth will result in cleaning off grass and bug stains. DO NOT OPERATE AIRPLANE IN RAIN since the propeller will get damaged.

**ENGINE COMPARTMENT:** Thoroughly check and inspect the engine compartment, including the reduction gear unit, exhaust system, fuel system, oil system, and coolant system. Remove and clean the carburetor bowls. Clean (replace if required) the carburetor air filter. The engine and compartment should be kept free of any accumulation of oil, grease and dirt to prevent a fire hazard. See the Engine Manual for more information.

**ENGINE:** Refer to engine Manual.

**ENGINE COWLING:** Check for looseness, "DZUS" fasteners, front pins, and any damage or cracks. Make sure it is properly Secured.

**FUEL:** Remove, clean and re install gascolator. Inspect for any leaks and loose fittings in the lines and tank(s), and assure the smooth operation of shut off valves. Clean (or replace) any installed filters.

**EVERY 100 HOURS , OR SIX MONTHS (whichever comes first)**

Clean the aircraft : exterior and interior and remove the rear fuselage bottom access door.

Make a thorough inspection of the whole aircraft, inspecting for any damage, wear, or corrosion.

**FRONT OF AIRCRAFT:** Check and inspect the following: Engine (see Engine Manual), Controls and hoses , engine mount, propeller, battery, exhaust ,radiator, firewall, nose gear and wheel. Check that all bolts and nuts are tight and safely tied.

**FUEL SYSTEM:** Check for leaks, check condition and safety of lines and valve operation. Clean, re-install (or replace) and secure all filters, gascolator and tank finger screen.

**FUSELAGE:** Check skins and internal structure for loose rivets, bolts, corrosion, and buckling due to miss handling or over stressing. Check that the drain holes in the bottom of the fuselage are not plugged up.

**CONTROLS:** Inspect for looseness, wear, fair leads, and terminals.

**INSTRUMENTS:** Check screws, fuses, markings, switches, pilot lines. Ensure that all the instruments are functioning correctly.

**WINGS AND STRUTS:** Check skins, replace loose rivets, check for corrosion and buckles (from mishandling), inspect leading edges and trailing edges. Check bolts and safety (struts, jury struts, wing root attachments, slats and flaperons). Check control surface stops and flaperon interconnection.

**TAIL :** Inspect skins and rivets, and look for and correct corrosion, etc. Check attachment of tail sections to fuselage, cable ends , trim tab, etc. Check control surface stops.

**LANDING GEAR :** Refer to the 25 hour check list.

OIL OR GREASE all moving parts : See following table.

After the thorough inspection of the aircraft and after having done the required maintenance and / or repairs, re-install the rear fuselage access door and run the engine for smooth operation.

<b>100 HOUR OIL SHCEDULE</b>
------------------------------

Check all control hinges and moving parts for wear. Replace when Clearance exceeds maximum wear of .025" (.6mm).

Oil the following (with standard "motor oil"):

All	bearings
All	flaperon hinge points
All	flaperon control rods*
	Roll control torque tube
	Elevator and trim (hinge +control)
All	rudder hinge points
All	elevator bell cranks*
	Flaperon mixer*
All	pitch control rod ends*
All	control stick bearings ( in cabin)
	Pedals (3 bearing, cable ends, brake pedals)
	Flaperon and trim controls
All	cable ends (also*)
All	throttle bearings
	Choke control (if applicable)
All	brake lines (mechanical)
All	door hinges and latch

\*Inside fuselage – access through fuselage door.

Grease (with ball bearing grease): The nose gear strut (top and Bottom bearing) and nose wheel axle and grease all cable fairleads.

Main gear spring attachment: Check that the rubber pads are undamaged and properly secured in place (check top and bottom, right and left sides).

**STANDARD OPERATING PROCEDURE: 02/2012**

**DEFECT REPORTING AND INVESTIGATION: MICROLIGHTS**

**Reference:** SOP: 01/2012 MAINTENANCE OF MICROLIGHT IN NCC

**List of Appendices:**

- A: Format for Serious Defect Report.
- B: Format for Defect Report.
- C: Format for Defect Investigation Report.
- E: Format for PWR.

**INTRODUCTION**

1. All airborne equipment are designed to give a specific performance over a period of time. A degree of reliability is in-built in the equipment and a system of preventive maintenance is followed against deterioration/failure in performance. Despite this, failures/defects do occur during the service life of the equipment which result in malfunction or premature withdrawals of components causing unserviceability or unreliability of the system. In the interest of flight safety and to improve the serviceability and reliability, it is necessary that any such defect is immediately reported on appropriate form, investigated and prompt remedial measures instituted to prevent recurrence.

**AIM**

2. The aim of this SOP is to lay down the procedure to be followed for reporting and investigating defects and premature failures on all types of airborne equipment in use in the NCC.

**Dealing with Defects and Failures.**

3. Whenever a defect or failure in equipment is noticed, preliminary investigation is to be carried out immediately at the unit level to determine the

seriousness of the defect. Defects and failures occurring in the airborne equipment could be attributed to any or a combination of the following causes:

- (a) Inadequate servicing/operating instructions.
- (b) Imperfect workmanship in manufacture/overhaul (OH) at Manufacturing/ repair agency.
- (c) Weakness in design.
- (d) Faulty material.
- (e) Corrosion, deterioration and/or excessive wear.
- (f) Equipment having been operated beyond the design limits.
- (g) Improper storage, when the equipment is not in use.
- (h) Deterioration of sub-assemblies/components during usage.
- (j) Environmental degradation.

**Serious Defects.**

4. In case the defect or failure has resulted in an accident/incident, or if the defect is considered to have serious ramifications on flight safety, they are termed as Serious Defects. All serious defects and failures will be reported by signal/fax followed by written report on Defect Reporting Form IAFF (T)-1022. Defects and failures of following nature are considered serious:-

- (a) Any defect, which in the opinion of the Court of Inquiry or Technical Investigation , has led to a Cat I/II/III accidents.
- (b) Any defect, which, has/could have led to a hazardous situation in the air.
- (c) Any case of material failure, the cause of which cannot be determined/ ascertained at unit level.



**Defect Reporting Action At Unit Level**

5. In the event of detection of a serious defect, Commanding Officer of the user unit shall raise a Serious Defect Report as per the format placed at **Appendix 'A'**. Recommendations of the CO on the requirement of ordering a one time check or any action in the interest of flight safety are to be included in the report. Lgs Air Cell at HQ DGNCC in consultation with Training Air cell/Manufacturer/Repair agency is to order a one time check on the fleet if required. Defect reports are to be dispatched to concerned agencies by fastest means such as speed post, courier service, E-mail, Fax, etc. as feasible. Whenever electronic media is used, a confirmation copy is to be sent by post. Colour Photographs are also to be attached, wherever physical damage is visible. A soft copy should also be dispatched subsequently. Unit is to ensure the following:

- (a) Check all relevant documents; collect information concerning the defect and raise Defect Report in the required format. Where necessary, photographs/sketches of the installation in the aircraft or system be attached with respective proforma. The proforma of Defect Report is placed at **Appendix 'B'**.
- (b) In case of engine/ hydraulic components, collect half-litre sample of engine oil/hydraulic fluid in use on the aircraft from which the component is removed in a surgically clean, dry glass bottle, seal and send the sample to investigating agency along with the component.
- (c) A Category 'Defect Investigation' (Cat' DI') label duly annotated with Defect Report (DR) registration number and signed by CO should also accompany the defective component. Secure label properly to ensure that it is not lost in transit.
- (d) No item should be cannibalised from it. The defective component must be complete in all respects.
- (e) Defective aero engines must be fitted with all original items as were fitted at the time of failure and must otherwise be complete in all respects. Cannibalisation of parts from such aero engines is not permitted.

(f) A photocopy of the Log book/Certificate is to be retained at unit, for record purpose. The defective item is to be packed in a separate packing case along with IAFF (T)-1022 and other related documents. The packing case is to be marked appropriately for easy identification and speedy movement of defective components to DI Agency. Components involved in accident/incident and where a COI/TI has been ordered are not to be despatched without prior concurrence of the Presiding Officer.

(g) Dispatch the defective item along with the issue vouchers (with annotation of details of DR in MTV) and the IAFF (T)-1022 to the DI agency under escort/courier as instructed by HQ DGNCC.

6. **Defect Register.** All defects and failures reported on IAFF(T)-1022 are to be recorded in a register and on computer. These records are to be maintained at the Unit. Registration numbers are to be given on yearly basis starting from 01 January. The DR Registration Number will be in sequence for both Serious Defects and Normal Defects. However, registers would be separate. Following information is to be recorded:

- (a) DR Registration No.
- (b) Nomenclature of component.
- (c) Section/Ref \_\_\_\_\_ Pt No \_\_\_\_\_.
- (d) Aircraft No.
- (e) Aero engine No.
- (f) Time between overhaul (TBO) /Life since New/Life since OH.
- (g) Nature of defect.
- (h) Date DR raised.
- (j) Dispatch Details (giving EX/IV No, unit to which dispatched and name of DI agency).
- (k) Case markings.
- (l) Mode of transportation.

- (m) Date component dispatched.
- (n) Defect Investigation Report (DIR) No (on receipt).
- (o) Recommendation of DI agency.
- (p) Follow up action taken by the unit.

7. **Action at Parent Directorate.** On receipt of Serious Defect Report from unit, Dte will consider seriousness of defect reported and intimate other units under its control operating similar equipment for initiating preventive measures wherever considered necessary. It will also scrutinise the defect report for correctness of information and monitor for prompt despatch of defective component to DI agency. It shall monitor and investigate cases relating to delayed /incorrect despatch of items and initiate necessary action against those not adhering to laid down instructions/procedures. It shall also monitor findings/recommendations of DI agency and ensure that remedial measures are implemented by all units concerned.

8. **Action at DGNCC.** On receipt of first information/fax Lgs Air cell at DGNCC is to take the following actions:

- (a) In case of known defects, necessary instructions be issued to operating units to dispense with the defect reporting procedure.
- (b) Wherever necessary, issue instructions to concerned units for inspection of entire stock of similar equipment in use or in storage for possible defects/shortcomings and obtain feedback on the defects/failures to ascertain the extent to which the fleet is affected.
- (c) Communicate disposal instructions to affected units and Dtes.
- (d) Liaise with DI agency and communicate to unit and Dte, , the designated DI agency, despatch instructions, mode of despatch , time frames for despatch, documentation requirements and any other instruction considered relevant to the issue.
- (e) Issue instructions to NCC Liaison cell for monitoring receipt of item, prompt loading of item for DI and timely completion of investigations.

9. **Action at NCC Liaison Cell.** On receipt of advance copy of Defect report from units, the same is to be registered in a register opened specifically for this purpose. Subsequently on receipt of the component, the same is to be identified and inducted for investigation. NCC Liaison cell is to check and reconcile receipt of components and intimate non receipt of items by fax to parent Dte, Unit and Lgs Air Cell at HQ DGNCC. NCC Liaison cell is to ensure that all components received for DI/PWR are loaded on the DI agency for investigation/repair on priority. NCC Liaison Cell will assist investigating team and provide useful information for the investigation. It is to obtain requisite information from field units and provide it to the investigating team as and when required. Liaison Cell is to ensure that all items loaded for DI are returned in a Cat 'B' condition within a reasonable time frame. In case any item is found to be 'Beyond Economical Repair', HQ DGNCC Lgs Air cell is to be immediately approached for necessary approval to declare the item Cat 'E' and further disposal.

10. **Action at Investigating Agency.** On receipt of defective item , a DI team is to be formed at the DI agency comprising of members from Production, Quality departments, NCC Liaison cell and member from Court of Inquiry (if applicable). The investigation is to be completed within 60 days of receipt at the DI agency. On completion of the investigation, DI agency is to render a detailed Defect Investigation Report in 05 copies as per the format given in **Appendix 'C'**.

11. **Action on DIRs.** On receipt of DIRs from Defect Investigation Agency, the Lgs Air Cell at HQ DGNCC is to study the DIRs and the recommended remedial measures. It is to forward copies of DIR to CSDO for effecting amendments in servicing schedules wherever necessary. It is to monitor and ensure implementation of remedial measures through the respective State Dtes.

**Reporting of Normal Defects/Premature Withdrawals.**

12. Logistic Air Cell at DGNCC is to prepare a list of components which can be repaired at the repair agency and put back in service and also for which detailed repair facilities exist (Listed Items). These components are to be assigned a unique serial number for proper identification and subsequent monitoring. These items are to be declared certificate items and proper component certificate/ log cards are to be prepared and maintained.

13. All cases of normal defects/ premature failures on 'Listed Items' which are not subjected to IAFF- 1022 action, are to be reported on Premature Withdrawal Report (PWR).

14. **Action at Units.** The following actions are to be taken in case of normal defects/premature withdrawals of Listed Components:

(a) Premature withdrawals of components meeting the criteria as per para 11 and 12 are to be reported on PWR proforma placed at **Appendix 'D'**.

(b) Inform Lgs Air Cell at HQ DGNCC and NCC Liaison cell by telephone/fax and update status on the Fleet Management software provided to units. Raise and process demand for unserviceable item as per laid down SOP.

(c) Collect all information regarding the defect and raise PWR as per format. Where necessary, photographs, sketches or other additional details be attached with the PWR. A categorisation label – Cat 'PW' annotated with PWR registration number and duly signed by CO should be properly secured to the component.

(d) Despatch the defective component along with issue voucher and copy of PWR to the NCC Liaison cell, along with other unserviceable items once a quarter for further investigation/repair.

(e) A quarterly summary of Premature Withdrawal Reports is to be rendered by unit and forwarded to parent Dte, HQ DGNCC Lgs Air Cell and NCC Liaison cell.

(f) All premature failures reported on PWR are to be recorded in a register as well as on computer. Separate registration numbers are to be given on yearly basis starting from 01 Jan. The format and information to be recorded is to be similar to that followed for DRs as given in Para 6 and by substituting the word DR with PWR wherever applicable.

15. **Action At Parent Directorate.** On receipt of quarterly summary of PWRs from units, concerned Dte to monitor Premature Withdrawal trend vis-à-vis

availability of floats for such components and follow up procurement action as necessary. Concerned units are to be instructed wherever necessary on any discrepancy in data on PWRs or in case of PWRs gone missing.

16. **Action At HQ DGNCC.** On receipt of first information from unit, Lgs Air cell is to examine the nature of unserviceability and seek clarifications from unit wherever necessary. Necessary action is to be taken to requisition repair/assessment party from manufacturer wherever applicable. It is to check availability of item with NCC Liaison cell/Manufacturer and instruct unit to process demand expeditiously. In case item is readily available, it shall issue allocation orders to NCC Liaison cell for issue of item to unit following laid down procedures in the relevant SOP.

17. **Action At Liaison Cell.** On receipt of premature withdrawal items along with PWRs from units, they are to be inducted for normal repair with the repair agency. However during the course of normal repair, the repair agency will diagnose the defect in order to ascertain reasons for failure and reasons for failure are to be recorded and made available to NCC Liaison cell. Liaison Cell is to ensure that all items loaded for repair are returned in a Cat 'B' condition within a reasonable time frame. In case any item is found to be 'Beyond Economical Repair', HQ DGNCC Lgs Air cell is to be immediately approached for necessary approval to declare the item Cat 'E' and further disposal. On receipt of quarterly summary of PWRs from units, reconcile data and take action on non receipt of components through normal laid down channels.

18. This SOP is applicable with immediate effect.

19. Any deviation to this procedure will be under the instructions of DDG (Lgs) only.

20. This has the approval of DG NCC.

(A P Tripathi)  
Brig  
DDG (Lgs)  
For DG NCC

Date: Aug 12

**Distribution:**

All NCC Dtes

All Air NCC Sqns

NCC Liaison Cell, Bangalore

**(Refers to para 5 of the SOP on Defect Reporting and Investigation)**

**SERIOUS DEFECT REPORT**

**(To be raised by Unit)**

**Layout**

1. Type of Aircraft
2. Aircraft No.
3. Aero Engine No.(When aero engine/aero engine rotables are involved)
4. Nomenclature of Defective Component
5. Section Reference No.
6. Serial No. of the component
7. Hrs flown since new
8. Hrs flown since overhaul
9. Main system /Sub system
10. Details of defects including symptoms of failure
11. Date defect occurred
12. Effect of failure
13. State whether the item is under warranty or not
14. Whether defect can be rectified with unit resources
15. If yes, detailed action and estimated man-hours
16. Recommendation of CO



**Distribution::**

HQ DG NCC(JD Lgs Air).

Concerned Dte.

Concerned GP HQ.

NCC Liaison Cell.

**QUARTERLY STATUS ON DEFECT REPORT**

**(To be raised by NCC LIAISON CELL)**

<b><u>Type of A/C</u></b>	<b><u>IAFF(T)- 1022 Ref No</u></b>	<b><u>Particulars of Defective items</u></b>	<b><u>Repair Agency</u></b>	<b><u>Date of Dispatch</u></b>	<b><u>Date of Receipt at NCC LIAISON CELL</u></b>	<b><u>Date of Loading For DI</u></b>

**Distribution:**

1. JD Lgs( Air)
2. Concerned Dte.
3. Concerned GP HQ.
- 4 . Unit
5. File

**(Refers to Para 5(a) of SOP on  
Defect Reporting and Investigation )**

**DEFECT REPORT**

**PART-I**(F-1241 Reference as per .....)

Date of Occurrence of Incident:

Date of F-1241:

DR No:(Unit/Type of ac/DR/SI No.../Calendar year)

Aircraft No:

Date when DR raised:

**PART-II**(Details of defective component)

Vocab No:

Life completed since new:

Part No:

Trade:

Nomenclature:

TBO:

Component SI No:

Life completed since O/H:

System:

Main Assembly:

SL No.(if applicable):

Signature:

SNCO I/C:

**PART-III(Defect Particulars)**

Symptoms.....  
 .....  
 .....

Checks/Rectification done at Unit Level  
 .....  
 .....

Probable cause of defect (whenever feasible)  
 .....  
 .....

Date:

Signature CO

**PART-IV(Dispatch Details)**

Consignee:

DI Agency:

EX/IV No & Date:

Mode of conveyance:

Date of Dispatch:

Date:

Signature CO

**Distribution:**

- 1.HQ DG NCC(JD Lgs Air)
- 2.Concerned Dte
- 3.Concerned GP HQ
- 4.NCC Liaison Cell(Advance Copy)
- 5.DI Agency with Component.

(Refers to Para 9 of SOP  
on Defect Reporting and Investigation)

**DEFECT INVESTIGATION REPORT**  
**(To be raised by DI Agency)**

**PART-I**

Date of Occurrence :

DIR No.

Date :

DR /Ref No:

Date:

F-1241 Ref:

Date:

**PART-II(Detail of defective component)**

Date component received:

Sec Ref/Vocab No:

Life completed since new:

Part No:

Trade:

Nomenclature:

TBO:

Component SI No:

Life completed since O/H:

System:

Main Assembly:

SL No.(if applicable):

**PART-III(Brief Particulars of Defect)**

.....  
.....  
.....  
.....

**PART-IV(Investigation)**

**Detail of Examination**.....  
.....  
.....  
.....  
.....

**Findings/Conclusion**.....  
.....  
.....  
.....

**Remedial measures** .....  
.....  
.....  
.....

**Suggested Implementation Agency:** .....

**Attributability Code: (Tick any one or more as applicable)**

U	R	D	F	N	C	N
---	---	---	---	---	---	---

Authorized Signatory of  
DI Agency

Authorized Signatory of  
NCC Rep  
Date:

**PART-V**

**Remarks by RCMA/RTO(as applicable)**

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.....

**(Design aspect)**

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.....

Signature:

Date:

**PART-VI**

**Remarks by CRI/CQA(as applicable)**

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.....  
.....  
.....

Signature:

Date:

**Distribution:**

- 1.HQ DG NCC(JD Lgs Air)
- 2.Concerned Dte
- 3.Concerned GP HQ
- 4.NCC Liaison Cell
- 5.UNIT

**Attributability Codes:**

- U**-Lapses on the part of users
- R**-Lapses on the part of repair agency/Manufacturers
- D**-Due to features inherent in the design
- F**-Failure due to ageing, Corrosion, Material failure etc.
- N**-Defect not established
- C**- Defect cause not established
- M**-Other reasons(Misc)

**Appendix 'D'**

(Refers to Para 13(a) of SOP  
on Defect Reporting and Investigation)

**PREMATURE WITHDRAWAL REPPORT(PWR)**

**(To be raised by the Unit)**

**PART-I**

PWR NO:(Unit/Type of ac/PWR/Sl. No...../Calendar year)

Aircraft No:

Date:

**PART-II(Detail of Faulty component)**

Sl. No.(if applicable):

Vocab No:

Life completed since new:

Part No:

Trade:

Nomenclature:

TBO:

Component Sl. No:

Life completed since O/H:

System

Main Assembly:

Date:

Signature of SNCO I/C



**PART-III(Details of Failure/Trouble shooting)**

.....  
.....  
.....  
.....

Date:

Signature of CO

**PART-IV(Dispatch Details)**

Consignee:

EX/IV No & Date :

Mode of conveyance:

Date of Dispatch:

Date:

Signature of CO

**Distribution:**

- 1.HQ DG NCC(JD Lgs Air)
- 2.Concerned Dte
- 3.Concerned GP HQ
- 4.NCC Liaison Cell(Advance Copy)
- 5.DI Agency with Component.



