APPENDIX - I

LEADERS OF ARMED FORCES OF INDIA BETWEEN 1947 AND 1971

SUPREME COMMANDERS

Dr. Rajendra Prasad
Dr. S. Radhakrishnan
Dr. Zakir Hussain
Shri. V.V. Giri

CHAIR PERSONS OF THE DEFENCE COMMITTEE OF THE CABINET

Shri. Jawaharlal Nehru
Shri. Lal Bahadur Sastri
Shrimati. Indira Gandhi

DEFENCE MINISTERS

Sardar Baldev Singh
Shri. Gopalaswami Ayyangar
Dr. Kailash Nath Katju
Shri. V.K. Krishna Menon
Shri. Y.B. Chavan
Sardar Swaran Singh
Shri. Jagjivan Ram.
AIR CHIEFS

Air Marshal Sir Thomas Walker Elmhirst, 1947 (C-in-C)
Air Marshal Ronald Irwin Chapman, 1948
Air Marshal G.E. Gibbs, 1951
Air Marshal S. Mukherjee, 1954
Air Marshal A.M. Engineer, 1959
Air Chief Marshal Arjan Singh, 1964

ARMY CHIEFS

General Sir R. M. Lockhart, 1948 (C-in-C)
General F. R. R. Bucher, 1948
General K. M. Cariappa, 1949
General Rajendra Sinhji, 1955
General S. M. Shrinagesh, 1955
General K. S. Thimayya, 1957
General P. N. Thapar, 1961
General J. N. Chaudhuri, 1963
General P. P. Kumaranmangalam, 1966
General S. H. F. J. Manekshaw, 1969

NAVAL CHIEFS

Rear Admiral J. T. S. Hall (C-in-C)
Vice-Admiral Sir Edward Perry, 1948
Vice-Admiral Sir C. T. M. Pizey, 1951
Vice-Admiral Sir S. H. Carlill, 1955
Vice-Admiral R. D. Katari, 1958
Vice-Admiral B. S. Soman, 1962
Admiral A. K. Chatterji, 1964
<table>
<thead>
<tr>
<th>AIR FORCE</th>
<th>ARMY</th>
<th>NAVY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fleet Marshal of the Airforce.</td>
<td>Field Marshal</td>
<td>Admiral of the Fleet</td>
</tr>
<tr>
<td>Air Chief Marshal</td>
<td>General</td>
<td>Admiral</td>
</tr>
<tr>
<td>Air Marshal</td>
<td>Lieutenant General</td>
<td>Vice Admiral</td>
</tr>
<tr>
<td>Air Vice Marshal</td>
<td>Major-General</td>
<td>Rear Admiral</td>
</tr>
<tr>
<td>Air Commodore</td>
<td>Brigadier</td>
<td>Commodore</td>
</tr>
<tr>
<td>Group Captain</td>
<td>Colonel</td>
<td>Colonel</td>
</tr>
<tr>
<td>Wing Commander</td>
<td>Lieutenant Colonel</td>
<td>Commander</td>
</tr>
<tr>
<td>Squadron Leader</td>
<td>Major</td>
<td>Lieutenant Commander</td>
</tr>
<tr>
<td>Flight Lieutenant</td>
<td>Captain</td>
<td>Lieutenant/ Branch List Officer</td>
</tr>
<tr>
<td>Flying Officer</td>
<td>Lieutenant</td>
<td>Petty Officer</td>
</tr>
<tr>
<td>Pilot Officer</td>
<td>1Ind Lieutenant</td>
<td>Leading rate, Able rate, Ordinary rate</td>
</tr>
</tbody>
</table>
APPENDIX - III

AIR FORCE RECRUITING CENTRES (1971)

Ambala Cantonment
Bangalore Cantonment
Bhubaneswar
Bombay-I
Calcutta - 20
Jabalpur
Jamnagar
Jodhpur
Jorhat
Kanpur Cantonment
New Delhi
Patna
Poona
Secunderabad
Simla
Srinagar
Tambaram

No: 48, Mansfield Road,
HQ Training Command
A.F.I. Building Hospital Lane
Dhobi Talao
No: 1, Gokhale Road
Air force station
Air force station
No: 9, Wheelers Barrack,
Cambridge Road
Air force station, Safdar Jung

APPENDIX - IV

PRINCIPAL TRAINING ESTABLISHMENT

1. Air force academy - Hyderabad
2. Advanced Flying Training School - Bidar
3. Advanced Flying Training School - Hakimpet
4. MIG Operational Fighter Training Unit - Tezpur
5. Helicopter Training Unit - Hakimpet
6. Navigation and Signal School - Hyderabad
7. ATC School - Hyderabad
8. Flight Instructors School - Tambaram

### Appendix V

**Defence Expenditure From 1951 To 1962**

(In Crores Rupees)

<table>
<thead>
<tr>
<th>No.</th>
<th>Years</th>
<th>Total</th>
<th>Army in Percentage</th>
<th>Navy in Percentage</th>
<th>Air Force in Percentage</th>
<th>In Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1951 - 52</td>
<td>197</td>
<td>153.64</td>
<td>77.98</td>
<td>7.66</td>
<td>3.88</td>
</tr>
<tr>
<td>4.</td>
<td>1954 - 55</td>
<td>210</td>
<td>150.50</td>
<td>71.66</td>
<td>11.08</td>
<td>5.27</td>
</tr>
<tr>
<td>5.</td>
<td>1955 - 56</td>
<td>203</td>
<td>137.30</td>
<td>67.63</td>
<td>12.04</td>
<td>5.93</td>
</tr>
<tr>
<td>6.</td>
<td>1956 - 57</td>
<td>266</td>
<td>182.88</td>
<td>57.47</td>
<td>12.66</td>
<td>4.75</td>
</tr>
<tr>
<td>7.</td>
<td>1957 - 58</td>
<td>293</td>
<td>179.49</td>
<td>61.25</td>
<td>14.16</td>
<td>4.83</td>
</tr>
<tr>
<td>8.</td>
<td>1958 - 59</td>
<td>292</td>
<td>167.68</td>
<td>57.42</td>
<td>16.37</td>
<td>5.60</td>
</tr>
<tr>
<td>9.</td>
<td>1959 - 60</td>
<td>283</td>
<td>167.25</td>
<td>59.09</td>
<td>15.11</td>
<td>5.33</td>
</tr>
<tr>
<td>10.</td>
<td>1960 - 61</td>
<td>297</td>
<td>190.43</td>
<td>64.11</td>
<td>17.66</td>
<td>5.94</td>
</tr>
<tr>
<td>12.</td>
<td>1962 - 63</td>
<td>521</td>
<td>338.48</td>
<td>64.96</td>
<td>16.58</td>
<td>3.18</td>
</tr>
<tr>
<td></td>
<td><strong>AVERAGE</strong></td>
<td><strong>275</strong></td>
<td><strong>180.11</strong></td>
<td><strong>66.46</strong></td>
<td><strong>13.59</strong></td>
<td><strong>5.02</strong></td>
</tr>
</tbody>
</table>

**Source:** Compiled out of various Defence Sources.
# APPENDIX - VI

**DEFENCE EXPENDITURE FROM 1963 TO 1972**

(In Crores of Rupees)

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>YEARS</th>
<th>TOTAL</th>
<th>PERCENTAGE OF GNP</th>
<th>ARMY</th>
<th>IN PERCENTAGE</th>
<th>NAVY</th>
<th>IN PERCENTAGE</th>
<th>AIR FORCE</th>
<th>IN PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1963 - 64</td>
<td>816.12</td>
<td>4.54</td>
<td>531.90</td>
<td>67.17</td>
<td>21.30</td>
<td>2.60</td>
<td>133.70</td>
<td>16.4</td>
</tr>
<tr>
<td>2.</td>
<td>1964 - 65</td>
<td>805.80</td>
<td>3.82</td>
<td>524.20</td>
<td>65.05</td>
<td>22.90</td>
<td>2.84</td>
<td>126.10</td>
<td>15.6</td>
</tr>
<tr>
<td>3.</td>
<td>1965 - 66</td>
<td>884.76</td>
<td>4.05</td>
<td>566.60</td>
<td>64.03</td>
<td>29.30</td>
<td>3.31</td>
<td>144.30</td>
<td>16.3</td>
</tr>
<tr>
<td>4.</td>
<td>1966 - 67</td>
<td>908.59</td>
<td>3.60</td>
<td>593.60</td>
<td>65.34</td>
<td>37.70</td>
<td>3.70</td>
<td>147.20</td>
<td>16.2</td>
</tr>
<tr>
<td>5.</td>
<td>1967 - 68</td>
<td>968.43</td>
<td>3.27</td>
<td>648.20</td>
<td>66.93</td>
<td>37.20</td>
<td>3.84</td>
<td>151.10</td>
<td>15.6</td>
</tr>
<tr>
<td>6.</td>
<td>1968 - 69</td>
<td>1033.19</td>
<td>3.41</td>
<td>692.00</td>
<td>66.97</td>
<td>38.80</td>
<td>3.75</td>
<td>169.50</td>
<td>16.4</td>
</tr>
<tr>
<td>7.</td>
<td>1969 - 70</td>
<td>1100.18</td>
<td>3.29</td>
<td>693.30</td>
<td>62.01</td>
<td>44.70</td>
<td>4.06</td>
<td>198.40</td>
<td>17.7</td>
</tr>
<tr>
<td>8.</td>
<td>1970 - 71</td>
<td>1199.26</td>
<td>3.28</td>
<td>930.30</td>
<td>77.57</td>
<td>55.40</td>
<td>4.61</td>
<td>222.90</td>
<td>18.6</td>
</tr>
<tr>
<td>9.</td>
<td>1971 - 72</td>
<td>1528.34</td>
<td>3.91</td>
<td>959.20</td>
<td>62.88</td>
<td>67.60</td>
<td>4.43</td>
<td>271.10</td>
<td>17.8</td>
</tr>
<tr>
<td>10.</td>
<td>1972 - 73</td>
<td>1652.29</td>
<td>3.84</td>
<td>1025.00</td>
<td>62.03</td>
<td>65.50</td>
<td>3.96</td>
<td>295.20</td>
<td>17.9</td>
</tr>
<tr>
<td></td>
<td><strong>AVERAGE</strong></td>
<td></td>
<td></td>
<td><strong>716.43</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>EXPENDITURE</strong></td>
<td></td>
<td></td>
<td>1089.39</td>
<td>3.70</td>
<td>66.09</td>
<td>41.64</td>
<td>3.71</td>
<td>185.95</td>
</tr>
</tbody>
</table>

**SOURCE:** Compiled out of various Defence Sources.
**APPENDIX - VII**

**INDIA'S COMBAT AIRCRAFT**

<table>
<thead>
<tr>
<th>PRINCIPAL SUPPLIERS</th>
<th>AIRCRAFT</th>
<th>TOTAL NUMBER OF SQUADRON</th>
</tr>
</thead>
<tbody>
<tr>
<td>Britain/UK</td>
<td>i. Canberra Bombers B-58 &amp; B-12</td>
<td>3 Squadrons consist of 50 aircraft.</td>
</tr>
<tr>
<td></td>
<td>ii. Gnat Mid-Jet Fighters F-1</td>
<td>8 Squadrons consist of 160 aircraft.</td>
</tr>
<tr>
<td></td>
<td>iii. Hunter Bombers F-26</td>
<td>4 Squadrons consist of 65 aircraft.</td>
</tr>
<tr>
<td>Hindustan Aeronautics Limited (HAL) India</td>
<td>HF - 24 Marut Fighter Bomber.</td>
<td>4 Squadrons consist of 80 aircraft.</td>
</tr>
<tr>
<td>Russia/USSR (HAL Licensed production)</td>
<td>i. MIG - 21 F Fighter Bomber.</td>
<td>11 Squadrons consist of 200 aircraft.</td>
</tr>
<tr>
<td></td>
<td>ii. Su - 7B Light Bomber.</td>
<td>5 Squadrons of 100 aircraft.</td>
</tr>
</tbody>
</table>

**SOURCE:**
- Military year books, New Delhi
- Armed forces year books, Bombay
- IDSA Source, New Delhi - 11
- SIPRI Year book, Stockholm.
<table>
<thead>
<tr>
<th>Principal Arms Suppliers</th>
<th>Air Craft &amp; Equipments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>China</strong></td>
<td>1 Squadron of IL - 28 Bombers</td>
</tr>
<tr>
<td></td>
<td>4 Squadrons of MIG - 19s</td>
</tr>
<tr>
<td><strong>France</strong></td>
<td>5 Alouette III Helicopters</td>
</tr>
<tr>
<td></td>
<td>24 Mirage III Fighters</td>
</tr>
<tr>
<td><strong>Iran</strong></td>
<td>4 Lockheed C-130E Hercules</td>
</tr>
<tr>
<td></td>
<td>Transport Planes</td>
</tr>
<tr>
<td></td>
<td>Few F-86 Sabres</td>
</tr>
<tr>
<td><strong>Saudi Arabia</strong></td>
<td>Few F-86 Sabres, Ammunitions and air craft spares.</td>
</tr>
<tr>
<td><strong>USA</strong></td>
<td>120 F-86 Sabres</td>
</tr>
<tr>
<td></td>
<td>26 Martin Canberra B-57 Bombers</td>
</tr>
<tr>
<td></td>
<td>6 Martin Canberra RB-57 Bombers</td>
</tr>
<tr>
<td></td>
<td>12 Lockheed F-104A Star Fighters</td>
</tr>
<tr>
<td></td>
<td>2 Lockheed F-104B Star Fighters</td>
</tr>
<tr>
<td></td>
<td>15 Sikorsky S-55 Hunters.</td>
</tr>
</tbody>
</table>
7 Lockheed RT-33A Reconnaissance Trainers.

4 Grumman HU-16A Mari-time Reconnaissance aircraft.

4 Kaman HH-43B Huskie Hunters.

6 Lockheed C-130E Hercules Transport aircraft.

10 Lockheed T-33A Trainers.


USSR Mi-8 Helicopters & Spares for MIG-19s

APPENDIX - IX


In 1933, 1st April: First Flight of No. 1 Squadron had four WAPTI aircraft.

1937 : Three Flights (No.1 Squadron completed).

1939 : One squadron consisted of Wapti and Andax bilanes with 1628 officers and other categories.

1945 : 3 Fighter reconnaissance squadrons

2 Ground attack squadrons

2 Light Bomber squadrons

2 Fighter squadrons

with 29,201 officers and other categories.

1947 (After Partition): 7 Fighter squadrons

1 Transport squadron

1 Artillery observation post-flight
In 1962:

- 6 Fighter squadrons
  (Four of Mysteres and Two of Gnats)

- 12 Bomber squadrons (Six of Hunters, Two of Ouragons, One of Vampires and three of Canberras.

- 1 Reconnaissance squadron of Canberra P.R. 57s.

- 6 Transport squadrons of C.119, DC-3, Dero IL-14 Otter and AN-12S.

- 60 Helicopters comprised of Bell 47, Sikorsky S-55 and Mi-4.

- 1 Artillery observation post (Auster MK-9s)

- and a good number of B-24s Viscount, 730 and Harvard.

In 1965:

- Total aircraft around 775.

- 4 Squadrons of GNATS (25 aircraft each)

- 4 Squadrons of Mysteres (25 aircraft each)

- 4 Squadrons of Canberra bombers (20 aircraft each)

And the host of other systems as stated in 1962 column.
In 1971: An operational strength of 625 Aircraft organised into 45 Squadrons.

3 Light Bomber squadrons (SU-7)
11 Fighter-Bomber squadrons (MIG-21)
5 Fighter-Bomber squadrons (HF-24 MARUT)
2 Fighter-Bomber squadrons (HUNTER F-56)
6 Fighter-Bomber squadrons (Mystere - IV)
7 Interceptor squadrons (CNATS)
1 Reconnaissance squadron (Canberra PR-57)
1 Maritime reconnaissance squadron (L-1049)

Transport squadrons include
55 C-47s, 60 C-119s, 20 IL-14s, 30 AN-12s,
25 Otters, 12 HS-748s, and 15-Caribous.

Helicopters Units include
80-Mi-4s, 150 Aloutte III, 10 Bell - 47s,
and Mi-8s.

Missiles: 50 SA-2 SAM missiles.

SOURCE: Indian Armed Forces year books.

Military year books.
SIPRI year book.
IDSA, New Delhi.
INDIAS AIR POWER IN 1994

Total Personnel : 1,10,000

AIR COMMANDS

Operational Commands

1. Western Air Command - New Delhi
2. South West Air Command - Jodhpur
3. Eastern Air Command - Shillong
4. Central Air Command - Allahabad
5. Southern Air Command - Trivandram
6. Maintenance Air Command - Nagpur
7. Training Air Command - Bangalore

FLYING BRANCH Contains Six Categories

1. AIR DEFENCE

17 Squadrons with 350 MIG - 21 PL/PFMA/M/MF/BIS
2 Squadrons with 45 MIG - 23 MF
6 Squadrons with 96 MIG - 29 M/MF/BM.

2. STRIKE UNITS

5 Squadrons with 120 Jaguar
4 Squadrons with 95 MIG - 23 BN
9 Squadrons with 200 MIG - 27 M
2 Squadrons with 37 Mirage 2000 H
1 Squadron with 18 MIG - 21 B

3. **CLOSE AIR SUPPORT**

Five Squadrons comprise a mix of Mi-25, Mi-35/35P and Hind helicopters. These are collectively controlled by the Army.

4. **HELICOPTER UNITS**

Seventeen Squadrons of Mi-8/17/26.

5. **TRANSPORT UNITS**

6 Squadrons with 119 AN-32
2 Squadrons with 43 DC-228
1 VIP Squadron
2 Squadrons with 40 HS-748
3 Squadrons with 47 IL-76.

6. **RECONNAISSANCE & EW**

Two Squadrons equipped with
6 Canberra PR-57
4 Jaguar
4 HS-748 ELINT
2 Gulf Stream III ELINT
6 MIG-25 R.
In addition there are two Squadrons equipped for EW. One of which is flying a modified version of the MIG-21m and the other is equipped with the modified MIF-23 UM.

<table>
<thead>
<tr>
<th>Aircraft at Training Command's Disposal</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canberra B-58/PR</td>
<td>12</td>
</tr>
<tr>
<td>Hunter T-66/P-26</td>
<td>12</td>
</tr>
<tr>
<td>Jaguars</td>
<td>04</td>
</tr>
<tr>
<td>MIG-21a</td>
<td>40</td>
</tr>
<tr>
<td>MIG-21PL</td>
<td>40</td>
</tr>
<tr>
<td>MIG-23UM</td>
<td>04</td>
</tr>
<tr>
<td>Chetak</td>
<td>20</td>
</tr>
<tr>
<td>AN-12</td>
<td>10</td>
</tr>
<tr>
<td>AN-32</td>
<td>10</td>
</tr>
<tr>
<td>IL-76</td>
<td>01</td>
</tr>
<tr>
<td>Mi-8</td>
<td>17</td>
</tr>
<tr>
<td>HS-748</td>
<td>27</td>
</tr>
<tr>
<td>HPT-32/UJT-16</td>
<td>100</td>
</tr>
</tbody>
</table>

**Total**: 294

**Source**: SP's Military year book 1993 - 94
APPENDIX — XI


1947
i. MiG-15 UTI (Mikoyan) Soviet jet was introduced in Russia.

ii. Bell X-1 Supersonic aircraft of the USAF flew at a speed of 1.06 Mach (967 MPH).

1950
i. Air borne early warning aircraft E-1 Tracer was developed with APS-20 Radar in the USA.

ii. Jupiter ballistic rocket, perfected by Dr. Von Braun of Germany was introduced in the USA.

1953
MiG-19 Soviet Supersonic was introduced.

1954
North America F-100 Supersonic of USA was introduced.

1956
F-104 Lockheed Star fighter came successfully.

1957
i. British lightening and Russian MiG-21 were introduced.

MC-Donell F-101 B Voodoo all-weather interceptor was instituted in the US.

ii. Sputnic - I was launched.

1959
First American Satellite Discovery was launched.

1960
i. VTIOL (Vertical take off and Landing) P 1127 aircraft was introduced, as Harrier in UK and AV - 8A in the US later on.

ii. Several air-to-air missiles like Sparrow, Red top, Falcon, French R-530 and Soviet versions with an effective range of 10 miles were put into service.
iii. AN-12 Long and Medium range transport aircraft was put into service in the Soviet Union.

iv. In the space both USA and USSR were busy in launching Reconnaissance (spy) satellites.

v. Anti-submarine helicopter Sikorsky S-61 seaking was introduced in the USA.

1961

Mirage III Interceptor and close support fighter of France was introduced.

1962

i. SU-9 (Sukhoi) an all weather interceptor fighter in
   Soviet Union and MC donnell F-4 Phantom - II of the USA were introduced.

1965

TU-22 Supersonic strategic bomber was introduced in the USSR.

1959.

SU-15 a principal interceptor equipped with skip spin radar used by the Soviet air defence regiments was introduced.

1970

F-16 A fighting Falcon a light weight fighter with fly-by-wire control was introduced in the USA.

REFERENCE:


****