

# HUNDRED AND SEVENTEENTH REPORT

## PUBLIC ACCOUNTS COMMITTEE (1982-83)

(SEVENTH LOK SABHA)

### DELAY IN DEVELOPMENT AND MANUFACTURE OF AN AIRCRAFT AND MANUFACTURE OF DEFECTIVE CARTRIDGE CASES FOR AN AMMUNITION

MINISTRY OF DEFENCE

[Action Taken on 33rd Report (7th Lok Sabha)]



*Presented in Lok Sabha on....  
Laid in Rajya Sabha on....*

LOK SABHA SECRETARIAT  
NEW DELHI

August, 1982/ Sravana, 1904 (S)

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CORRIGENDA TO 117TH REPORT (SEVENTH LOK SABHA)  
ON DEFENCE SERVICES PRESENTED TO LOK SABHA ON  
8.10.1982.

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<u>Page</u>	<u>Para</u>	<u>Line</u>	<u>For</u>	<u>Read</u>
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## C O N T E N T S

	PAGE
<b>COMPOSITION OF THE PUBLIC ACCOUNTS COMMITTEE (1982-83)</b>	<b>iii</b>
<b>INTRODUCTION</b>	<b>v</b>
<b>(PART I)</b>	
<b>CHAPTER I</b>	<b>1</b>
<b>CHAPTER II</b>	<b>10</b>
<b>CHAPTER III</b>	<b>21</b>
<b>CHAPTER IV</b>	<b>29</b>
<b>CHAPTER V</b>	<b>35</b>
<b>(PART II)</b>	
Minutes of the sitting of the Action taken Sub-Committee of public Accounts Committee (1982-83) held on 20 July, 1982	<b>36</b>
<b>APPENDIX</b>	<b>38</b>

PUBLIC ACCOUNTS COMMITTEE  
(1982-83)

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Shri Satish Agarwal

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1. Shri T. R. Krishnamachari—*Joint Secretary*
2. Shri K. C. Rastogi—*Chief Financial Committee Officer*
3. Shri K. K. Sharma—*Senior Financial Committee Officer*

## INTRODUCTION

I, the Chairman of the Public Accounts Committee as authorised by the Committee, do present on their behalf, this Hundred and Seventeenth Report on Action Taken by Government on the recommendations of the Public Accounts Committee contained in their 33rd Report (7th Lok Sabha) regarding delay in development and manufacture of an aircraft and manufacture of defective cartridge cases for an ammunition.

2. In this Report the Committee have pointed out that the Air Force authorities had no precise idea of the real nature of the development effort required particularly in the context of the new role the Gnat MK I aircraft was intended for. Decisions were taken in *ad hoc* manner from time to time resulting in escalation in cost as well as in heavy time overrun. The Committee have, therefore, reiterated the view expressed earlier that the Ministry of Defence did not take a comprehensive view of the project based on a clear perception of the requirements. The Committee expect that proper lessons would be drawn from the experience in this case and that in future better care and attention would be given in planning and execution of such developmental projects within a time bound programme.

In another case of manufacture of defective cartridge cases for an ammunition in an ordnance factory resulting in heavy expenditure on their repairs (Rs. 1.49 crores till June 1981) and on import of 50,000 brass blanks at a cost of Rs. 83.42 lakhs, the Committee have reiterated that the matter should be investigated thoroughly and responsibility fixed for the lapses without any further delay.

3. On 11 June, 1982, the following Action Taken Sub-Committee was appointed to scrutinise the replies received from Government in pursuance of the recommendations made by the Public Accounts Committee in their earlier Reports:

- |                                 |   |         |
|---------------------------------|---|---------|
| 1. Shri Satish Agarwal—Chairman | } | Members |
| 2. Shri K. Lakkappa             |   |         |
| 3. Shri G. L. Dogra             |   |         |
| 4. Shri Sunil Maitra            |   |         |
| 5. Shri Bhiku Ram Jain          |   |         |
| 6. Shri Kalyan Roy              |   |         |

( v )

4. The Action Taken Sub-Committee of the Public Accounts Committee (1982-83) considered and adopted the Report at their sitting held on 20 July 1982. The Report was finally adopted by the Public Accounts Committee (1982-83) on 3 August, 1982. Minutes of the sitting of the Action Taken Sub-Committee form Part II of the Report.

5. For facility of reference and convenience, the recommendations and observations of the Committee have been printed in thick type in the body of the Report and have also been reproduced in a consolidated form in the Appendix to the Report.

6. The Committee place on record their appreciation of the assistance rendered to them in this matter by the Office of the Comptroller and Auditor General of India.

NEW DELHI;

SATISH AGARWAL,

*August 3, 1982*

*Chairman,*

*Sravana 12, 1984 (S).*

*Public Accounts Committee*

## CHAPTER I

### REPORT

1.1 This Report of the Committee deals with the action taken by Government on the Committee's recommendations and observations contained in their 33rd Report (7th Lok Sabha) on Paragraphs 6 and 19 of the Report of the Comptroller and Auditor General of India for the year 1978-79, Union Government (Defence Services) regarding delay in development and manufacture of an aircraft and manufacture of defective cartridge cases for an ammunition.

1.2 The 33rd Report was presented to Lok Sabha on 15 April, 1981 and contained 29 recommendations. The Committee view with concern the inordinate delay on the part of the Department of Defence Production in furnishing replies to the recommendations/ observations of the Committee. According to the time schedule, the notes indicating the action taken by Government in pursuance of the recommendations and observations contained in 33rd Report duly vetted by Audit were required to be furnished to the Committee latest by 15 October, 1981. The Committee regret to observe that the replies have not only been submitted in a piecemeal fashion but have also been considerably delayed. The last reply (Recommendation at S. No. 15) was received on 17 June, 1982 that is eight months after the due date. The Committee expect that the Department would ensure that such delays are avoided in future.

1.3 The Action taken notes received from Government have been broadly categorised as follows:—

(i) Recommendations and observations that have been accepted by Government:

S. Nos. 6—9, 11—14, 16, 17, 20, 21, 24, 26, 27.

(ii) Recommendations and observations which the Committee do not desire to pursue in the light of the replies received from Government:

S. Nos. 1, 2, 10, 18, 19, 22, 23 and 25.

(iii) Recommendations and observations replies to which have not been accepted by the Committee and which require reiteration:

S. Nos. 3—5, 15, 28 and 29.

(iv) **Recommendations** and observations in respect of which Government have furnished interim replies:

**NIL**

1.4 The Committee will now deal with the action taken by Government in the following recommendations.

**Delay in Development of an aircraft (S. Nos. 3—5, Para Nos. 1.94—1.96)**

1.5 Commenting upon the delay in execution of the project for development of an improved version (designated as MK-II) of an existing MK-I aircraft approved by Government in September, 1972, the Public Accounts Committee had, in paragraphs 1.94 and 1.95 of their 33rd Report (Seventh Lok Sabha) observed as under:

“The proposal to improve upon the capabilities of MK-I aircraft was conceived in early 1972, and regular work on the project was started in October, 1972. Surprisingly, even though the development work on the project had not made much headway, the Ministry of Defence approved placement of bulk orders without first asking for a prototype so as to satisfy themselves that it conformed to all the requirements. The Committee are not convinced with the argument advanced by the Chairman HAL that “it was only an improvement from MK-I to MK-II. The prototype is there only when a new product is introduced”. The fact of the matter as admitted by representative of Air HQs is that whereas Gnat is an air defence aircraft, Ajeet is meant primarily for ground attack. To quote “There was a change of role. We are not going to use Ajeet in air-defence role. I do not think that was the requirement”. Considering that Gnat MK-I aircraft was itself an undeveloped aircraft and its whole history “has been one of development and improvement”, it is obvious that such a major change of role should have impelled the authorities concerned to proceed in the matter with caution.

It would, on the other hand, appear that the parameters of the development programme were not clearly spelt out with the result that the Air Staff Requirements (ASR) of May, 1972 in respect of MK-II had to be revised and a fresh ASR issued in June, 1974 wherein certain additional tasks were assigned to HAL. It is unfortunate that the Ministry of Defence should have placed bulk orders for an aircraft which was still under development

and which was intended to play an altogether different role than its predecessor in service without being themselves clear of the precise nature of the developmental tasks that were required to be done."

1.6 In the action taken note dated 12 January, 1982 as amended by corrigendum dated 31 March, 1982, the Department of Defence Production have stated:

"The Gnat MK.I aircraft was an air defence aircraft. However, with a change in the environment following the acquisition of sophisticated aircraft and air defence system by our adversaries, the sub-sonic Gnat could no longer be expected to meet the demands of the air defence role and Gnat MK.II was therefore, considered for the ground attack role. It was felt that the improved version could be well utilised in the close air support role. This change in role did not call for any basic design changes to the Gnat MK.I aircraft. The improvements required in the Gnat were not in its aircraft and engine but in its systems. However, changes in the systems necessitated airframe reinforcement/strengthening certain structural areas of the air frame. The observation that Gnat MK.I was an undeveloped aircraft and "its whole history has been one of development and improvements" related to the stage of its induction. When Govt. decided to in for Gnat MK.II, the development work on Gnat MK.I had been completed and the aircraft had been battletested and proven. It is a fact that Gnat MK.II was only an improvement of Gnat MK.I, which was a fully proven aircraft. Separate manufacture of a prototype would have been time-consuming, and would have delayed the production of Gnat MK.II and increased its cost.

Bulk orders were placed in consideration of the long lead time required for production and a measure of confidence that HAL should be able to carry out successfully the improvements warranted in the MK.II.

However, the observations of the Public Accounts Committee have been noted."

1.7 The Committee had further observed (Para 1.96):

"The Committee find that over and above the amount of Rs. 99 lakhs sanctioned for the development programme

of September 1972, funds to the tune of Rs. 94.5 lakhs were sanctioned in July 1976 and July 1977 for tasks provided in the ASR of 1974 for MK.II. A further sanction of Rs. 126.5 lakhs is stated to be under consideration for tasks consequent to the recommendations of the specialist committee set up by IAF, extended developmental efforts due to shortfall in radius of action and design deficiency in the development of modified control unit etc. Thus the total estimated expenditure on the development programme has shot up to Rs. 320 lakhs as against Rs. 99 lakhs envisaged earlier. That successive sanctions had to be issued to deal with the tasks laid down in the ASR of 1974 does not square up with the Ministry's contention that "the difference between the ASR 22/1972 and ASR 4/1974 was not substantial." In actual fact, "the development activity on the project was not defined at one point of time". The Ministry have admitted that "progressive addition of tasks till as late as 1978-79 has had a significant impact on the development expenditure/schedule as well as ultimate target set for the delivery of production aircraft." The Committee thus find that the Ministry of Defence did not take a comprehensive view based on a clear perception of the defence requirements based on changed situation."

1.8 In their reply dated 12 January, 1982 the Department of Defence Production have stated:

"Soon after the 1971 conflict, Air Force made a comprehensive reassessment of its defence requirements. One of the decisions was to further exploit the excellent characteristics of the Gnat aircraft, proved amply during the 1965 and 1971 conflicts, for the near future period, till new design of aircraft became available for modernisation and re-equipment. The aim was to improve the Gnat MK.I in the ground attack role by increasing the armament carrying capacity and radius of action. Accordingly, ASR 22/72 was issued for the development of Gnat MK.II aircraft as a derivative of Gnat MK.I. It was assessed that the cost and the time for development and manufacture of Gnat MK.II would be comparatively low as it was to be a derivative of Gnat MK.I aircraft. Induction of Gnat MK.II into service was to meet the requirements of the Air Force in the mid/late 70s. It would avoid costly imports and effect savings. For the same

reasons, i.e. low cost and early induction into the service, ASR/26/72 was issued for retromodification of some Gnat MK.I aircraft with adequate fatigue life, to Gnat MK.II standard.

ASR 4/74 was a mere formalisation of ASR 22/72, necessitated after further dialogue with HAL in the feasibility studies. The new ASR mainly incorporated changes sought by HAL. As a result the requirements in respect of war load and radius of action stipulated in ASR 4/72 were more relaxed than those specified in ASR 22/72. The changes brought out as a result of ASR 4/74 did not involve much development. Increase in development expenditure was mainly due to progressive addition of tasks which HAL were required to undertake over and above the ASRs in order to improve the operational capability of the aircraft, as also due to protracted period taken in the developmental process to remove the known defects of the Gnat Mk.I especially in the flight control system."

**1.9 In Paras 1.94—1.96 of the 33rd Report (Seventh Lok Sabha), the Public Accounts Committee had pointed out that the parametres of the development programme for improving upon the capabilities of MK.I aircraft were not clearly spelt out and additional tasks were assigned to HAL from time to time resulting not only in increase in the development expenditure from Rs. 99 lakhs to Rs. 320 lakhs but also in a delay of 7 years in the completion of the project. The Committee had further observed that it was unfortunate that the Ministry of Defence placed bulk orders for an aircraft which was still under development and which was intended to play an altogether different role than its predecessor in service without being clear of the precise nature of the developmental tasks that were required to be done. According to the Ministry "this change (in the role of aircraft from air defence role to that of ground attack role) did not call for any basic design changes to the Gnat MK.I aircraft. The improvements required in the Gnat were not in its airframe and engine but in its systems. However, changes in systems necessitated reinforcement/strengthening of certain structural areas of the airframe. . separate manufacture of a prototyps would have been time consuming and would have delayed the production of Gnat MK.II and increased its cost."**

**1.10 The Committee find that according to the Ministry's own admission "increase in development expenditure was mainly due to progressive addition of tasks (till as late as 1978-79) which HAL**

were required to undertake over and above the ASRs (Air Staff Requirements) in order to improve the operational capability of the aircraft as also due to protracted period in the developmental process to remove the known defects of the Gnat MK-I especially in the flight control system." It is thus clear that the Air Force authorities had no precise idea of the real nature of the development effort required particularly in the context of the new role the aircraft was intended for. Decision were taken in ad hoc manner from time to time resulting in escalation in cost as well as in heavy time overrun. Viewed in this context, the argument that separate manufacture of a prototype would have been time consuming and would have delayed the project, does not carry conviction with the Committee. The Committee would therefore reiterate the view expressed earlier that the Ministry of Defence did not take a comprehensive view of the project based on a clear perception of the requirements. The Committee expect that proper lessons would be drawn from the experience in this case and that better care and attention would be given in planning and execution of such developmental projects within a time bound programme.

**Redundancy due to short closure of orders for the manufacture of an aircraft (S. No. 15—Paragraph 1.106)**

1.11 Stressing the need to find out at as early as possible, alternate uses to the material which had become redundant due to short closure of the production programme and reduction in the retromodification programme, the Committee in Paragraph 1.106 of their 33rd Report had observed as under:—

"The Committee understand that the cost of redundancy due to short-closure of orders for the manufacture of Mk. II aircraft and the reduction in the number of Mk. I aircraft to be retromodified has been worked out to Rs. 199.64 lakhs. In addition the total value of components/materials obtained for development but not utilised is Rs. 9.68 lakhs. Thus the total redundancy is of the order of Rs. 209.32 lakhs (provisional sanction issued for Rs. 250 lakhs in August, 1980). Of this, the proprietary items and the Hobson Unit account for redundancy of the order of Rs. 92.00 lakhs. The Committee were informed during the evidence that HAL has found alternative uses for materials worth Rs. 95.00 lakhs. The Committee desire that alternate uses should be found for the remaining items as quickly as possible so that the element of redundancy is reduced to the minimum extent".

1.12 In their Action Taken note dated 17-6-1982, the Department of Defence Production have stated:—

“Noted. The amount of redundancy as on 31-10-1981 in respect of HAL, Lucknow Division, was estimated at Rs. 101.43 lakhs. Out of this, components/materials worth Rs. 26.12 lakhs are expected to be utilised on Ajeet Trainer programme. In Aircraft Division out of a total inventory of Rs. 350.00 lakhs as on 31-10-1981, materials of the value of Rs. 245.00 lakhs are earmarked towards the present firm production programme leaving material worth Rs. 105.00 lakhs unutilised. This amount of Rs. 105.00 lakhs is expected to be reduced further to about Rs. 50.00 lakhs as and when the anticipated order for Kiran Mk. II and Ajeet Trainer aircraft are received by HAL. The exact amount of redundancy can, however, be arrived at only on completion of the Ajeet Kiran Mk. II and Ajeet Trainer production programmes”.

1.13 The Ministry of Defence had intimated Audit in November 1979 that the cost of redundancy on account of short closure of orders for manufacture of MK-II aircraft and reduction in the number of MK-I aircraft to be retromodified worked out to Rs. 199.64 lakhs. In addition, the cost of surplus items in respect of development programme was Rs. 9.68 lakhs. Thus the total redundancy was of the order of Rs. 209.32 lakhs. The Committee had been informed that alternate uses for material worth Rs. 95.00 lakhs had been found by HAL. This left a balance of Rs. 114.32 lakhs worth of redundant material, in regard to which the Committee had desired the Ministry to find out alternate uses at an early date so that the element of redundancy was reduced to the minimum extent. From the information now furnished by the Department of Defence Production, the Committee find that the revised estimate of redundancy as on 31 October, 1981 places the figure at Rs. 451.43 lakhs of which HAL, Lucknow Division accounts for Rs. 101.43 lakhs and Aircraft Division Bangalore for Rs. 350 lakhs. Of this, materials worth Rs. 271.12 lakhs are expected to be utilised under the present firm production programme. This would leave a balance of Rs. 180.31 lakhs worth of redundant stores still on hand. The Ministry have added that the exact amount of redundancy could be arrived at only on completion of the Ajeet, Kiran MK-II and Ajeet Trainer production programme.

1.14 The Committee regret that incorrect/incomplete data regarding the redundancy of materials were furnished to audit in the first instance. No explanation has been given by the Ministry with

regard to the wide variation in the two sets of figures viz., Rs. 209.32 lakhs given to Audit in November 1979 and Rs. 451.43 lakhs now indicated. The Ministry owe it to the Committee to explain this wide discrepancy in figures. The Committee would also be interested to know what efforts, if any, are being made to find out alternative uses for the surplus items and how long it would take to exhaust the same.

**Manufacture of Defective Cartridge cases for an ammunition (Sl. Nos. 28 and 29—Paragraphs 2.28 and 2.29)**

1.15. Taking a serious note of the manufacture of defective cartridge cases for an ammunition in an ordnance factory, the Committee in Paragraph 2.29 of the 33rd Report had observed as under:—

“In view of the heavy expenditure having to be incurred on the repair of cartridge cases and on import of 50,000 brass blanks having been ordered at a cost of Rs. 83.42 lakhs, the Committee would like the matter to be investigated with a view to fix responsibility for the lapses that had occurred at various levels and kept informed of the action taken.”

1.16. In their action taken note dated 1 December, 1981, the Department of Defence Production have stated:—

“The recommendation of the Board of Enquiry is under examination. Comments of the Ordnance Factory Board thereon will follow shortly.”

1.16A. The Department of Defence Production have further stated that 64,614 Nos. of defective cartridge cases have been repaired till June, 1981 and the total estimated cost of the repairs is Rs. 149.40 lakhs.

**1.17. Dealing with another case of manufacture of defective cartridge cases for an ammunition in an Ordnance Factory, the Committee had pointed out in para 2.29 of the 33rd Report that in view of the heavy expenditure required to be incurred on the repair of the cartridge cases (an expenditure of Rs. 1.49 crores is stated to have been incurred so far on repair of 64,614 out of a total of 99,885 defective cartridge cases) and in addition on import of 50,000 brass blanks at a cost of Rs. 83.42 lakhs, the matter should be investigated with a view to fixing responsibility for the lapses that had occurred at various levels. Elsewhere in the Report, the Committee had pointed out that the Board of Enquiry which was**

set up in December, 1977 to investigate the causes and circumstances leading to the defective manufacture of cartridge cases and to fix responsibility therefor, was received in August, 1980 i.e. after a delay of 2½ years. Disregarding the finding of the Board of Enquiry that "no particular individual is responsible for this (lapse)", the Committee had urged that responsibility should be fixed for the various lapses in this case. The Ministry have stated in reply that the recommendation of the Board of Enquiry is under examination. The Committee deplore such exercise in prevarication. Considering the heavy infructuous expenditure involved, the Committee reiterate that the matter should be investigated thoroughly and responsibility fixed for the lapses without any further delay. The Committee desire that this enquiry should be completed within three months and they should be informed of the precise action taken in the matter.

## CHAPTER II

### RECOMMENDATIONS AND OBSERVATIONS THAT HAVE BEEN ACCEPTED BY GOVERNMENT

#### **Recommendation**

The Committee find that a critical area where improvement was needed was the longitudinal control system with modified power control. The modified 'Hobson' unit was supplied by a foreign firm—Lucas Aerospace, was deficient in design and it took nearly four years for the firm to rectify the deficiencies after repeated tests and trials. As there was no penalty clause in the contract with the firm, the HAL had no option but to wait for the item which was completed in all respects only in October, 79.

The Ministry have explained that in such developmental contracts, it is difficult to persuade the foreign company accept penalty clause.

[SI. No. 6 (Para 1.97) of appendix to 33rd Report of PAC (7th Lok Sabha)].

#### **Action Taken**

Noted.

[Department of Defence Production F. No. 48/42/11/81/D(HAL) MDN) date 23-11-1981]

#### **Recommendation**

The Committee observe that after sustained efforts, HAL have been able to develop MK. II aircraft to the specifications prescribed in ASR 4/74 except for a minor shortfall in the radius of action. It has however, not been possible to clear the aircraft for carriage of a set of rockets and the permissible weapon load has been restricted.

[SL No. 7 (Para No. 1.98) of appendix to 33rd Report of PAC (7th Lok Sabha)].

#### **Action Taken**

Noted.

[Department of Defence Production F. No. 48/42/11/81/D(HAL) MDN) date 23-11-1981]

### **Recommendation**

The Committee further note that after carrying out modifications in the flying control and hydraulic systems the performance of the MK. II aircraft has been found to be quite satisfactory. Nevertheless the number placed order with HAL has been reduced drastically and no further aircraft of this type would be needed during the extended period of development, on account of a perceptible change in the security environment. It has now been realised that the MK. II aircraft would not be viable weapons system well beyond the mid 80's. The Committee have however been informed that the MK. II aircraft would continue to have a role in areas "where the air environment is expected to be less intense and less hostile".

[Sl. No. 8 (Para 1.99) of appendix to 33rd Report of PAC (7th Lok Sabha)].

### **Action Taken**

Noted

[Department of Defence Production F. No. 48|42|11|81|D (HAL) MDN) date 23-11-1981]

### **Recommendation**

The Committee find that the retro-modification programme designed to bring the MK. I aircraft to MK. II standard was also curtailed severely; an expenditure of Rs. 2.45 crores has thus far been incurred as against the estimated cost of Rs. 21 crores (approx) on the entire retro-modification programme.

[Sl. No. 9 (Para 1:100) of Appendix to 33rd Report of Public Accounts Committee, 1980-81 (7th Lok Sabha)].

### **Action Taken**

Noted.

[Department of Defence Production F. No. 48|42|11|81|D (HAL) MDN) date 23-11-1981]

### **Recommendation**

The Committee understand that certain maintenance problems noticed during the initial use of MK. II aircraft have been by and large, resolved. However, in order to prevent failures, the existing equipment will be replaced by improved equipment. The Committee hope that in view of the limited period of viability of these

aircraft, the necessary improvements would be incorporated without delay.

[Sl. No. 11 (Para 1.102) of appendix to 33rd Report of PAC (7th Lok Sabha)]

### **Action Taken**

Two improvements, *viz* introduction of Collins X|UHF system and introduction of high capacity Generator (Auxilec) have been proposed for incorporation in the Gnat MK. II aircraft. Action to introduce Collins V|UHF systems was initiated in December, 1977. So far 24 aircraft have been retrofitted with this system. Necessary mod kits have already been fabricated by HAL for the remaining aircraft.

2. Action to introduce high capacity Generator (Auxilec) was initiated in May, 1980. However, certain snags were observed during compliance of the modification on aircraft. The Generator will be retrofitted on the aircraft after removal of snags.

3. With regard to residual life of the Aircraft, it may be mentioned that the fatigue testing of the Aircraft is under progress by Design Bureau of H.A.L. to establish the actual service life of Ajeet aircraft. As the above mods are being incorporated on the aircraft at the earliest, these aircraft can be considered to have full service life.

[Department of Defence Production F. No. 48|42|19|81|D (HAL MDN) dt. 31-3-1982]

### **Recommendation**

The Committee view with concern that the Gnat MK. I aircraft have been involved in a number of accidents/incidents since their induction in squadron services. Technical defect in the airframe have been responsible for the largest number of accidents and incidents followed by Engine failures, defects in the control systems and in the tyres.

Sl. No. 12 (Para No. 1.103) of appendix to the 33rd report of the Public Accounts Committee 1980-81 (7th Lok Sabha).

**Action taken**

Noted.

[Department of Defence Production F. No. 48|42|15|81|D(HAL|MDN) dated 23-11-1981].

**Recommendation**

The Committee understand that study Group headed by a senior officer was appointed by Government in October 1971 to investigate the longitudinal control problems on the Gnat aircraft and find a solution for them. The Study Group's recommendations are stated to have been by and large accepted and implemented.

Sl. No. 13 (Para 1.104) of appendix to the 33rd report of the Public Accounts Committee 1980-81 (7th Lok Sabha).

**Action Taken**

Since this is a statement of fact no action on the part of Government is required to be taken.

[Department of Defence Production F. No. 48|42|15|81|D(HAL|MDN) dated 23-11-1981].

**Recommendation**

The Committee observe that during the course of its inquiry the Study Group found that investigation into aircraft accidents involving the Longitudinal Control System had been unsatisfactory for want of qualified investigators and that the findings of a large number of technical defect reports were not available either at HAL or Air HQrs. The Committee consider this to be a serious matter. They recommend that necessary steps should be taken immediately to provide qualified investigators and the system of maintenance or investigation records should be spruced up so as to facilitate ready reference as and when needed.

[Sl No. 14 (Para 1.105) of Appendix 33rd Report of PAC (7th Lok Sabha)].

**Action Taken**

The recommendations made by the PAC for better accident investigation have been noted for compliance.

2. Dte of Flight Safety at Air HQrs has fulfledged aircraft accident investigation board consisting of highly qualified and experienced officers of both flying and Technical Branches who also

undertake detailed independent investigations in all serious accidents. They have also officers trained abroad on accident investigation techniques. The Government have approved on 22nd September 1980, the establishment of a Flying Safety Institute which will train Air Force personnel on accident preventive techniques as well as to undertake research and analysis on flight and maintenance safety. HAL is also planning to have in the Design Complex, an Air Worthiness Organisation and this will enable availability of qualified investigators and adequate reference data on various defects|accidents|incidents.

3. In all cases of serious accidents the composition of Courts of Inquiry is done very carefully by selecting experts on the aircraft involved. In certain cases the matter is referred to the country of origin of the aircraft|engines to seek their assistance in identifying the cause of the accident. Remedial measures are always taken without undue delay.

4. The Gnat MK. II handling flight was formed at HAL, Bangalore Complex in April, 1978. For the period 1978-79 defect reports and their findings are available with the Maintenance Branch at Air HQrs. In addition, the Product Support Department of HAL has been made responsible for maintaining data on defects|incidents|accidents.

[Department of Defence Production F. No. 48|42|16|81|D (HAL)  
MDN) dt. 12-1-1982]

### Recommendation

The Committee note that out of the first batch of MK. II aircraft handed over to the Air Force by HAL in March, 1978, six were allotted to the MK. II handling flight and the rest were handed back to the HAL for storage because it was stipulated that the first MK. II squadron would be formed only after sufficient experience on technical and operational aspects had been gained in the handling flight. As stated earlier, the MK. II aircraft were inducted into squadron service as late as in December, 1979. As pointed out in the Audit Paragraph the Air Headquarters had stated (June 1979) that the aircraft could not be inducted service *inter-alia* for the reason that sufficient number of operating personnel did not have the required experience. The Ministry have, however, stated "there was no delay in building up the required competence and experience for absorbing MK. II aircraft. Handling flight was formed in April, 1978 and the required pilots and technicians were train-

ed well in time for running the first squadrons". The Committee find that it took nearly 20 months for the Air Force authorities to induct MK. II aircraft into squadron service after formation of the handling flight. Apparently, the training of pilots and technicians was not given sufficient priority and the aircraft had to be kept in storage for a considerable time. The Committee hope that this kind of lapse in an important area will not occur in future.

[Sl. No. 16 (Para 1.107) of appendix to 33rd Report of PAC (7th Lok Sabha)].

#### **Action Taken**

Noted.

[Department of Defence Production F. No. 48|42|21|81|D(HAL) MDN) dated 23-11-1981].

#### **Recommendation**

Considering the fast growing technology in the field of Aeronautics/aerospace in the world, the Committee feel that India cannot afford to be left behind in this important area. Fortunately HAL has already got the necessary infrastructure and is now in a position to extend the field of activity and can improve its capabilities further. The Committee would, therefore, like the Ministry of Defence to prepare a perspective plan to meet the requirements of the Air Force during the next 10 years and assign specific tasks to HAL without delay. The Committee recommended that adequate funds should be made available by Government for R&D effort in the field of aircraft development that would feed into the futuristic projects to be assigned to HAL.

[Sl. No. 17 (Para 1.108 appendix to 33rd Report of PAC (7th Lok Sabha)]

#### **Action Taken**

The observations of the PAC have been noted. A proposal for setting-up of an organisation in the Ministry of Defence for long-term perspective planning is under consideration. Government is making all efforts to provide the indigenous aircraft and avionics industry adequate opportunities for development project; adequate funds have also been and are being ear-marked for these projects. [Department of Defence Production F. No. 48|42|22|81|D(HAL) MDN) dt. 2-2-1982].

#### **Recommendation**

The Board of Enquiry which examined the matter came to the conclusion that the remouth annealing operation which was pro-

vided for in the original ROF, Birtley Production Mannual did not find place in the process schedule of Ordnance Factory Ambarnath due to 'inadvertance' and that no particular individual was responsible for this lapse. It was also pointed out that the facilities available at O.F. Board Headquarters for dealing with such documents by way of receiving, accounting, cataloguing the preserving them and also forwarding them to various consignees such as the Authority Holding Sealed Particulars (AHSP) and the Ordnance Factories were far too inadequate.

[Sl. No. 20 (Para 2.20) of Appendix to 33rd Report of PAC (7th Lok Sabha)].

### **Action Taken**

Necessary instructions laying down the procedure to be followed in future right from receipt of the technical documents under Licence Agreement from the Collaborations or DRDO upto successful productionisation of new store in order to avoid such lapse in future have been issued by the OFB *vide* their letter No. 220|P|QC, dated 13.8.81. The concerned Divisions in Ordnance Factory Board have been instructed to distribute the documents to the Factories who will manufacture the components and to the AFSP concerned in order to enable the latter to distribute the documents including the drawings, specifications, process schedules, etc. received from the Licensor to the Inspecting Authorities concerned. The manufacturing agencies will make a comprehensive process schedule containing details of the process, complete inspection details of equipments and toolings at the time of establishment of a store. This process schedule will be forwarded to the local Inspector and to the AHSP of the end store under intimation to all concerned and respective Division of the O.F. Board.

[Department of Defence Production U.O. No. 4/2/81/D(PROD), dated 12.11.1981].

### **Recommendation**

The Committee take a serious view that such vital documents as licence agreements with foreign firms and the process schedule attached thereto are not being preserved with the care and caution that is called for, so that in this case even their existence was forgotten with the passage of time. The Committee would, therefore,

like to be informed of the remedial measures taken by the Ministry of Defence to ensure that such costly lapses do not recur.

[Sl. No. 21 (Para 2.21) of Appendix to 33rd Report of PAC (7th Lok Sabha)].

### **Action Taken**

Necessary instructions laying down the procedure to be followed in future right from receipt of the technical documents under Licence Agreement from the Collaborators or DRDO upto successful productionisation of new store in order to avoid such lapses in future have been issued by the O.F. Board *vide* their letter No. 220/P/OC, dated 13.8.81. The concerned Division in Ordnance Factory Board have been instructed to distribute in documents to the Factories who will manufacture the components and to the AHSP concerned in order to enable the latter to distribute the documents including the drawings, specifications, process schedules, etc. received from the Licenser to the Inspecting Authorities concerned. The manufacturing agencies will make a comprehensive process schedule containing details of the process, complete inspection details of equipments and toolings at the time of establishment of a store. This process schedule will be forwarded to the local Inspector and to the AHSP of the end store under intimation to all concerned and respective Division of the Ordnance Factory Board.

[Department of Defence Production U.O. No. 4/2/81/D(Prod), dated 12.11.1981].

### **Recommendation**

From the sequence of events brought out above the Committee have come to the conclusion that a serious matter like defect in the cartridge cases and their investigation by the CI (Metals) was handled in a very casual manner. They consider the delay of about  $\frac{1}{2}$  years from August, 1973 when unsatisfactory performance of ammunition 'X' on firing was noticed till Feb. 1976 when the second report was submitted by CI (Metals), to be excessive.

[Sl. No. 24 (Para 2.24) of Appendix to 33rd Report of PAC (7th Lok Sabha)].

### Action Taken

The defect investigation is a long and tedious process which requires a very close cooperation between the users, various agencies of Inspection Organization and the Producers. After the defect report is raised by the units, the Authority Holding Sealed Particulars (AHSP) calls for the defective samples from the User units to carry out investigation. The investigation, in such a case, involves removal of the propellant charge, the primer and forwarding the cartridge cases to CI (Met) Ichapur, to subject them for various specialised metallurgical tests and advice. The explosive portion is sent to CIME for chemical analysis and their comments. The comments are then scrutinised by the main AHSP—(CIA)— and trial remedial measures are then passed on to the various production agencies for implementation. From the above, it will be seen that the channel is long and the process of investigation tedious and this would invariably take anything between a year to a 1½ years for its final implementation. However, as a remedial measure a letter has been issued by O.F. Board to CI (Met) to intimate expeditiously whether any further report of defect such as stores corrosion, cracking or any other defect have been received by them from the users and also whether the same was thoroughly investigated. They have also been requested to communicate their findings on such reports to the manufacturer i.e. General Manager, O.F., Katni for necessary action under O.F. Board No. 12101/P(M), dated 14.8.81 endorsing copy to the DGI, DI (Arm), DOS and others.

The General Manager, O.F., Katni was also instructed *vide* Ordnance Factory Board letter No. 12101/P(M), dated 12.8.81 to conduct examination of the programme of the cartridge cases manufactured from April, 1976 onwards alongwith the representatives of CI(Met) and I. of A., Katni, in order to determine whether the defects have now been eliminated. It was since been confirmed by CI (Met), I. of A. Katni and O.F., Katni that no defect report has been received by them in respect of cartridge cases given full mouth Annealing *vide* letter No. 12101/P(M), dated 26-9-81.

[Department of Defence Production U.O. No. 4/2/81/D(Prod), dated 12.11.1981]

### Recommendation

Yet another disturbing aspect of the matter is the leisurely way in which the enquiry in this case was conducted. The Report of the Board of Enquiry set up in December, 1977 to investigate

the causes and circumstances leading to the defective manufacture of the cartridge cases by O.F. Katni and to fix responsibility was due for submission by 20 February, 1978. It was, however, received only in August, 1980 i.e. after delay of 24 years. The reasons why it took the departmental Board of Enquiry so long to give their report need to be explained. The Committee would also be interested to know the action taken by the Ministry of Defence on the suggestions contained in the report.

[Sl. No. 26 (Para 2.26) of Appendix to 23rd Report of PAC (7th Lok Sabha)].

#### Action Taken

The delay in submission of the report by the Board of Enquiry was mainly on account of the following:—

- (i) Detailed examination of various technical issues involved.
- (ii) Consultations with various sister organisations, like DOS, CIA, MGO and DI(A).
- (iii) Calling for clarifications/files and documents from DGOF/concerned factories.
- (iv) Appointment of new Chairman of Board of Enquiry twice i.e. on 7-1-80 and 31-5-80 on account of retirement of incumbents.
- (v) Preoccupation of the first two Chairmen with other onerous responsibilities.

2. The report of the Board of Enquiry has been examined in the Ministry at the level of Minister of State for Defence. The position regarding remedial measures taken is as follows:

- (i) Remedial measures in respect of production and inspection of cartridge cases have been implemented.
- (ii) The recommendation about the three agencies viz. the producer, Inspector and AHSP being associated in formulating the process schedule is being implemented for future projects on new manufactures.
- (iii) Other procedural remedies suggested are under implementation and this should tighten the regular feed back on quality.

3. The Ordnance Factory Board are also now endeavouring to keep their eyes open on the quality of cartridge cases now being manufactured under the new process scheduled to get a technical feed back whether such cartridge cases in future years reveal any

stress corrosion cracks in the Depots due to long storage as assembled rounds.

[Department of Defence Production U.O. No. 4/2/81/D(Prod),  
dated 12.11.1981]

### **Recommendation**

2.27. The director of Inspection (Armaments) had recommended in May, 1977 that though the ammunition 'X' assembled with cartridge cases of 1974, 1975 and pre-July, 1976 gave satisfactory performance during firing trials at the annual inspection of the ammunition, these might be utilised at the earliest possible moment as these cartridge cases were liable to stress corrosion with the passage of time. The Committee would like to be informed of the position of utilisation of these cartridge cases and whether any more defective lots have come to notice.

[Sl. No. 27 (Para 2.27) of Appendix to 33rd Report of PAC (7th Lok Sabha)].

### **Action Taken**

105 mm Tank ammunition assembled with cartridge cases of 1974, 1975 and pre-July, 1976 were subjected to special proof firing. In the light of special proof firing results, DGI recommended that the involved stock should be issued out earlier and after 100 per cent issue inspection. Instructions have been issued accordingly to the depots.

No more defective lots have been reported by the user units.

[Department of Defence Production U.O. No. 4/2/81/D(Prod),  
dated 12.11.1981].

## CHAPTER III

### RECOMMENDATIONS AND OBSERVATIONS WHICH THE COMMITTEE DO NOT DESIRE TO PURSUE IN THE LIGHT OF THE REPLIES RECEIVED FROM GOVERNMENT

#### Recommendation

Government approved in September, 1972 the development by Hindustan Aeronautics Limited (HAL) of an improved version of MK.I (GNAT) aircraft designated as MK.II or Ajeet, at an estimated cost of Rs. 99 lakhs, with a foreign exchange component of Rs. 26 lakhs. The decision was based on a proposal submitted by HAL after carrying out feasibility studies. In July, 1973, the Ministry of Defence approved placement of orders on HAL by Air Headquarters for manufacture and supply of certain number of MK.II aircraft at an estimated cost of Rs. 36.04 crores. In October, 1973, Government approved yet another proposal for retro-modification of certain number of MK.I aircraft to MK.II standard at an estimated cost of Rs. 20.90 crores with a view to extend the useful life of the existing fleet of MK.I aircraft. Originally the development work was to be completed in about three years time and the MK.II aircraft were expected to be inducted in service during 1976-77.

The Committee find that the execution of both the development and manufacturing programmes was considerably delayed. The newly designed MK.II aircraft were inducted into squadron service only in December, 1979.

[S. Nos. 1 and 2 (Paras 1.92 and 1.93) of appendix to 33rd Report of PAC (7th Lok Sabha)]

#### Action Taken

The delay in development and manufacture of Gnat MK.II aircraft was mainly due to incorporation of additional tasks into the aircraft and problems encountered on the Hobson Unit supplied by a foreign firm, over which HAL had no control. However, the observation of the P.A.C. has been noted.

[Department of Defence Production F. No. 48|42|17|81|D(HAL|MDN) dated 28-11-1981]

### **Recommendation**

The Committee are not quite convinced with the argument advanced by the representative of the Deptt. of Defence Production during evidence that the decision of giving up the work on retro-modification of 90 per cent. of the proposed MK.I aircraft was on account of the remaining fatigue life being very limited and the wings were going to be new in the metro-modification. Apart from the fact that the reply is at variance with the explanation furnished earlier in writing that the production as well as the retro-modification programme was curtailed because of the changed security environment, it is to be noted that according to the original proposal the retromodified aircraft were to be delivered to the Air Force in a phased manner from 1977-78 to 1984-85. Obviously such a phased programme involving an expenditure of Rs. 21.00 crores must have taken into account the fatigue life of the MK.I aircraft. The Committee therefore consider that instead of embarking straightway on the production of MK.II aircraft on a large scale, it would have been prudent to have first gone in for the retro-modification of MK.I aircraft as such a course would have been far more economical specially when the retro-modified aircraft were expected to give the same capability as that of MK.II.

[Sl. No. 10 (Para 1.101) of appendix to 33rd Report of PAC  
(7th Lok Sabha)]

### **Action Taken**

Retromodification of Gnat MK.I would have required grounding of the aircraft in service during the period it was to be made available to HAL for work. Making available a large number of serviceable aircraft to HAL would have substantially affected the serviceable force level of the IAF and its operational preparedness. Taking up retromodification after the new aircraft had been delivered to IAF, would have considerably lessened this problem as the new aircraft would have been available to replace the aircraft to be withdrawn for retromodification. Hence, taking up retromodification at a stage after production of the new aircraft was preferable on operational considerations. The unforeseen delay in modifying Gnat MK.I to Gnat MK.II standard and subsequent production created a situation where the residual fatigue life available on Gnat MK.I aircraft had been reduced. This is because during the period of delay the Gnat MK.I aircraft had remained in service. In the meanwhile, the security environment also changed and it became necessary to have a more versatile aircraft than Gnat MK.II Under the cir-

cumstances, cut-back on the manufacture and retro-modification became an operational necessity.

[Department of Defence Production F. No. 48|42|14|81|D (HAL) |  
MDN) dt. 12-1-1982]

### **Recommendation**

Indigenous development of cartridge cases, Type I used for 'X' ammunition and 'X' APDS ammunition was first undertaken at Ordnance Factory, Ambernath (OFA), on the lines of process schedule obtained from the Government of UK under licence agreement during the year 1962. As a result of successive trials, a hybrid process schedule was evolved for the manufacture of cartridge case making use of the guidelines available in the UK manual modified to suit the local conditions with the help of expertise developed in the specialised field of armament technology in the country over a number of years. After regular indigenous production of this cartridge case was established at OAF development of indigenous production for cartridge case Type II which was identical to Type I except for the cannelure at 18" to 28" from the mouth to be provided in the case of Type II and that too, at the last stage, was also undertaken. However, for establishing production of cartridge case Type II a fresh reference to the manual (obtained from UK Government) was not considered necessary as according to the authorities incharge of production at OFA, "it would have been a repetitive process to first follow the UK manual and then carry out modification to the process to suit the local conditions which course of action had already been gone into while establishing indigenous production of Type I cartridge case. In fact, the locally designed process schedule for this case having already been adopted for implementation, even the existence of UK process schedule was forgotten with the passage of time".

[Sl. No. 18 (Para 2.18) of Appendix to 33rd Report of PAC  
(7th Lok Sabha)]

### **Action Taken**

The process schedules are made or modified according to the manufacturing facilities available to achieve the ultimate objective and obtaining a sound and acceptable product fulfilling the dimensional, metallurgical as well as mechanical properties. OFA consulted the UK process. Schedule as a guide line for adopting their own

process schedule taking into consideration the plants available in the Factory.

[Department of Defence Production U.O. No. 4281D(Prod), dated 12-11-1982]

### **Recommendations**

Consequently, when the production of these cartridge cases was first attempted at Ordnance Factory, Katni during 1968 with the help of OFA, the latter forwarded only copies of their own production schedules of OF, Katni but did not supply to it the basic manual indicating the correct manufacturing method. OF, Katni unaware of the background of development of the production schedule supplied by OFA switched over to regular production of Type II cartridge cases after initially doing some development work on manufacture of cartridge cases Type I and supplied 2,095 numbers of these cases in 1969-70 and 2,97473 numbers during 1971-72 to 1978-79 for manufacture of ammunition of 'X' in Ordnance Factory, Khamaria. In August, 1973 the user units reported unsatisfactory performance of ammn. 'X' on firing as the cartridge cases supplied by this factory had developed cracks and splits at the mouth. OF, Katni after taking remedial measures suggested by Controller of Inspection called for original UK manual indicating the correct manufacturing method. Thus, it was only on an examination of the manual supplied to it by OFA in March, 1977 that OF, Katni found that the process schedule supplied by OFA was not based on the manual and had certain omissions.

[Sl. No. 19 (Para 2.19) of Appendix to 33rd Report of PAC (7th Lok Sabha)]

### **Action Taken**

OF. Katni followed manufacturing schedule, as followed by Ordnance Factory, Ambernath. The process schedule for manufacture of cartg. cases RW 242 followed by OFA did not contain the particular stage of operation i.e. remouth annealing after canneluring although the same was provided in ROF Birtley manual. The Birtley Scheduled for both RW 242 and RW 244 were obtained by OFA during 1962 and were held by them. OFA started initially the development of cartg. cases RW 244 and subsequently development of RW 242 was taken up by them. When OF. Katni asked for the process schedule, OFA forwarded the schedule RW 244 to them. The process schedule for RW 244 did not, however, provide for canneluring operation and remouth annealing operation, whereas, provision for the same existed in the process schedule for RW 242. Since LTA opera-

tion was found to be adequate, no further remouth annealing was considered essential and the Inspectorate of Metal AHSP and end-store AHSP did not at first consider remouth annealing as an essential operation. It was only at a much later date that all concerned agreed that re-mouth annealing was essential. As brought out by the Board of Enquiry (Para 3.2.2.) the two factories which manufactured the empty cartg. cases end store AHSP and inspectorate who inspected the cases have not been familiar with the method of assembly of the projectile to the filled cartg. case. It was only after failures were reported that attention was drawn to this aspect and even then it took the material and end store AHSP almost 3 years after the formation of cracks on firing were reported to recommend a second mouth annealing operation after canneluring.

[Department of Defence Production U.O. No. 4/2/81/O (PROD, dated 12.11.1981)]

### **Recommendation**

The Committee observed that after the user units had reported in August, 1973 unsatisfactory performance of ammunition 'X' manufactured with cartridge cases supplied by OFA and OF, Katni which had developed cracks and splits at the mouth, the defects were investigated by the Controller of Inspection (Metals) in his first investigation report submitted during September, 1973, recommended effective 'Low Temperature Annealing' (LTA) treatment over the cannelure region of the cartridge cases. However when major defects in the cartridge cases were reported by the user units in July, 1974 samples of cracked and empty cases were sent to the Controller of inspection (Metals) who after carrying out metallurgical test reported (Dec. 75) to the Controller of Inspection (Ammunition) that the failure of the cartridge cases was due to stress corrosion which had developed during storage at the correct manufacturing method or process schedule was not followed.

[Sl. No. 22 (Para 2.22) of Appendix to 33rd Report of PAC  
(7th Lok Sabha)]

### **Action Taken**

O.F. Katni followed manufacturing schedule, as followed by Ordnance Factory, Ambemath. The process schedule for manufacture of cartg. cases RW 242 followed by OFA did not contain the particular stage of operation i.e. remouth annealing after conneluring although the same was provided in ROF Birtley manual. The Birtley Schedule for both RW 242 and RW were obtained by OFA during 1962 and were held by them. OFA started initially the

development of cartg. cases RW 244 and subsequently development of RW 242 was taken up by them. When O.F. Katni asked for the process schedule, OFA forwarded the schedule RW 244 to them. The process schedule for RW 244 did not, however, provide for canneluring operation and remouth annealing operation, whereas, provision for the same existed in the process schedule for RW 242. Since LTA operation was found to be adequate, no further remouth annealing was considered essential and the Inspectorate of Metal AHSP and end-store AHSP did not at first consider remouth annealing as an essential operation. It was only at a much later date that all concerned agreed that re-mouth annealing was essential. As brought out by the Board of Enquiry (Para 3.2.2.) the two factories which manufactured the empty cartridge cases end store AHSP and inspectorate who inspected the cases have not been familiar with the method of assembly of the projectile to the filled cartg. case. It was only after failures were reported that attention was drawn to this aspect and even then it took the material and end store AHSP almost 3 years after the formation of cracks on firing were reported to recommend a second mouth annealing operation after canneluring.

[Department of Defence Production U.O. No. 4281D(Prod), dated 12.11.1981]

### **Recommendation**

The Committee find that it was in the second investigation report submitted during December, 1975 that CI (Metals) recommended a full month annealing after the canneluring operation. The Committee further learn that on receipt of intimation from the Inspectorate of Metals in December, 1975 regarding cracks and defects in cartridge cases, O.F., Katni, introduced suitable changes in the manufacturing process in May, 1976.

[Sl. No. 23 (Para 2.23) of Appendix to 33rd Report of PAC (7th Lok Sabha)].

### **Action Taken**

O.F., Katni, followed manufacturing schedule as followed by Ordnance Factory, Ambarnath. The process schedule for manufacture of cartg. cases RW 242 followed by OFA did not contain the particular stage of operation i.e. remouth annealing after canneluring although the same was provided in ROF Birtley manual. The Birtley Schedule for both RW 242 and RW 244 were obtained by OFA during 1962 and were held by them. OFA started initially

the development of cartg. cases RW 244 and subsequently development of RW 242 was taken up by them. When O.F., Katni, asked for the process schedule, OFA forwarded the schedule RW 244 to them. The process schedule for RW 244 did not, however, provide for canneluring operation and remouth annealing operation, whereas, provision for the same existed in the process schedule for RW 242. Since LTA operation was found to be adequate, no further remouth annealing was considered essential and the Inspectorate of Metal AHSP and end-store AHSP did not at first consider remouth annealing as an essential operation. It was only at a much later date that all concerned agreed that re-mouth annealing was essential operation.

As brought out by the Board of Enquiry (Para 3.2.2.) the two factories which manufactured the empty cartridge cases end store AHSP and inspectorate who inspected the cases have not been familiar with the method of assembly of the projectile to the filled cartg. case. It was only after failures were reported that attention was drawn to this aspect and even then it took the material and end store AHSP almost 3 years after the formation of cracks on firing were reported to recommend a second mouth annealing operation after canneluring.

[Department of Defence Production U.O. No. 4|2|81|D(PROD), dated 12.11.1981]

#### **Recommendation**

The Committee find that CI (Metals) was aware that remedial measures adopted during 1972-73 had not provided fool-proof remedies against failure of cartridge cases as certain cases of failure of cartridge cases as certain cases of failure were still being reported. The Committee are not, therefore, convinced with the argument put forth by the Ministry that since remedial measures had already been taken, the instant defect investigation work from the metallurgical point of view was given lower priority. The Ministry's contention does not also square up with the findings of the Board of Enquiry that "the agencies who are to send samples for investigation should have acted with greater speed and reached the samples to CI (Metal) in 1974 itself, in which case possibly the production schedule could have been set right much ahead of April, 1976 when remouth annealing was introduced". The fact, therefore, stands out that both the DGOF and the CI (Metals) did not act promptly to get the defects investigated and rectified expeditiously.

[Sl. No. 25 (Para 2.25) of Appendix to 33rd Report of PAC (7th Lok Sabha).]

**Action Taken**

Split and emptied cases were sent to Controller of Inspection (Metals) in October, 1974 for metallurgical test. Hence there was no delay on the part of O.F. Organisation.

However, so far as remedial measure is concerned, the matter has been examined by Ordnance Factory Board and a circular has been issued to the concerned Factories vide their No. 12101/P(M), dated 14.8.81 wherein necessary instructions have been issued to the Factories concerned for expeditious investigation of the defects reported by the users and to take prompt remedial action for rectification of the defects in manufacture in future.

[Department of Defence Production U.O. No. 4/2/81/D(PROD), dated 12.11.1981]

## CHAPTER IV

### RECOMMENDATIONS AND OBSERVATIONS REPLIES TO WHICH HAVE NOT BEEN ACCEPTED BY THE COMMITTEE AND WHICH REQUIRE REITERATION

#### Recommendation

The proposal to improve upon the capabilities of M.K.I aircraft was conceived in early 1972, and regular work on the project was started in October, 1972. Surprisingly, even though the development work on the project had not made much headway, the Ministry of Defence approved placement of bulk orders without first asking for a prototype so as to satisfy themselves that it conformed to all the requirements. The Committee are not convinced with the argument advanced by the Chairman HAL that it was only an improvement from MK.I to MK.II. The prototype is there only when a new product is introduced. The fact of the matter, as admitted by representative of Air HQs is that whereas Gnat is an air defence aircraft, Ajeet is meant primarily for ground attack. To quote "There was a change of role. We are not going to use Ajeet in air defence role. I do not think that was the requirement". Considering that Gnat Mk.I aircraft was itself an undeveloped aircraft and its whole history "has been one of development and improvement it is obvious that such a major change of role should have impelled the authorities concerned to proceed in the matter with caution.

It would, on the other hand, appear that the parameters of the development programme were not clearly spelt out with the result that the Air Staff Requirements (ASR) of May, 1972 in respect of Mk.II had to be revised and a fresh ASR issued in June, 1974 wherein certain additional tasks were assigned to HAL. It is unfortunate that the Ministry of Defence should have placed bulk orders for an aircraft which was still under development and which was intended to play an altogether different role than its predecessor in service without being themselves clear of the precise nature of the developmental tasks that were required to be done.

[Sl. No. 3 and 4 (Paras 1.94 and 1.95) of Appendix to 33rd Report of PAC (7th Lok Sabha)]

### **Action Taken**

The Gnat Mk.I aircraft was an air defence aircraft. However, with a change in the environment following the acquisition of sophisticated aircraft and air defence system by our adversaries, the sub-sonic Gnat could no longer be expected to meet the demands of the air defence role and Gnat Mk.II was, therefore, considered for the ground attack role. It was felt that the improved version could be well utilised in the close air support role. This change in role did not call for any basic design changes to the Gnat Mk.I aircraft. The improvements required in the Gnat were not in its airframe or engine but in its systems. However, changes in systems necessitated reinforcement/strengthening certain structural areas of the airframe. The observation that Gnat Mk.I was an undeveloped aircraft and "its whole history has been one of development and improvements" related to the stage of its induction. When Government decided to go in for Gnat Mk.II, the development work on Gnat Mk.I had been completed and the aircraft had been battle-tested and proven. It is a fact that Gnat Mk.II was only an improvement of Gnat Mk.I, which was a fully proven aircraft. Separate manufacture of a prototype would have been time-consuming, and would have delayed the production of Gnat Mk.II and increased its cost.

2. Bulk orders were placed in consideration of the long lead time required for production and a measure of confidence that HAL should be able to carry out successfully the improvements warranted in the Mk.II.

3. However, the observations of the Public Accounts Committee have been noted.

4. DADS has seen.

[Department of Defence Production F. No. 48/42/9/81 D(HAL/MDN), dated 25-5-1982]

### **Recommendation**

The Committee find that over and above the amount of Rs. 99 lakhs sanctioned for the development programme of September, 1972, funds to the tune of Rs. 94.5 lakhs were sanctioned in July, 1976 and July, 1977 for tasks provided in the ASR of 1974 for MK.II. A further sanction of Rs. 126.5 lakhs is stated to be under consideration for tasks consequent to the recommendations of the specialist committee set up by IAF, extended developmental efforts due

to shortfall in radius of action and designed deficiency in the development of modified control unit etc. Thus the total estimated expenditure on the development programme has shot up to Rs. 320 lakhs as against Rs. 99 lakhs envisaged earlier. That successive sanctions had to be issued to deal with the tasks laid down in the ASR of 1974 does not square up with the Ministry's contention that "the difference between the ASR 22/1972 and ASR 4/1974 was not substantial." In actual fact, "the development activity on the project was not defined at one point of time". The Ministry have admitted that "progressive addition of tasks till as late as 1978-79 has had a significant impact on the development expenditure/schedule as well as ultimate target set for the delivery of production aircraft." The Committee thus find that the Ministry of Defence did not take a comprehensive view based on a clear perception of the defence requirements based on changed situation.

[Sl. No. 5 (Para 1.96) of Appendix to 33rd Report of PAC (7th Lok Sabha)].

#### Action Taken

Soon after the 1971 conflict, Air Force made a comprehensive reassessment of its defence requirements. One of the decisions was to further exploit the excellent characteristic of the Gnat aircraft, proved amply during the 1965 and 1971 conflicts, for the near future period, till new design of aircraft became available for modernisation and re-equipment. The aim was to improve the Gnat Mk.I in the ground attack role by increasing the armament carrying capacity and radius of action. Accordingly, ASR 22/72 was issued for the development of Gnat Mk.II aircraft as a derivative of Gnat Mk. I. It was assessed that the cost and the time for development and manufacture of Gnat Mk.II would be comparatively low as it was to be a derivative of Gnat Mk.I aircraft. Induction of Gnat Mk.II into service was to meet the requirements of the Air Force in the mid/late 70s. It would avoid costly imports and effect savings. For the same reasons, i.e. low cost and early induction into the service, ASR/26/72 was issued for retro-modification of some Gnat Mk.I aircraft with adequate fatigue life, to Gnat Mk.II standard.

2. ASR 4/74 was a mere formalisation of ASR 22/72, necessitated after further dialogue with HAL in the feasibility studies. The new ASR mainly incorporated changes sought by HAL. As a result the requirements in respect of war load and radius of action stipulated in ASR 4/74 were more relaxed than those specified in ASR 22/72. The changes brought out as a result of ASR 4/74 did not involve much development. Increase in development expendi-

ture was mainly due to progressive addition of tasks which HAL were required to undertake over and above the ASRs in order to improve the operational capability of the aircraft, as also due to protracted period taken in the developmental process to remove the known defects of the Gnat Mk.I especially in the flight control system.

[Department of Defence Production F. No. 48/42/10/81/D (HAL) | MDN) dated 12.1.82]

### **Recommendation**

The Committee understand that the cost of redundancy due to short-closure of orders for the manufacture of Mk.II aircraft and the reduction in the number of MK.I aircraft to be retro-modified has been worked out to Rs. 199.64 lakhs. In addition the total value of components/materials obtained for development but not utilised is Rs. 9.68 lakhs. Thus the total redundancy is of the order of Rs. 209.32 lakhs (provisional sanction) issued for Rs. 250 lakhs in August, 1980). Of this, the proprietary items and the Hobson Unit account for redundancy of the order of Rs. 92.00 lakhs. The Committee were informed during the evidence that HAL has found alternative uses for materials worth Rs. 95.00 lakhs. The Committee desire that alternate uses should be found for the remaining items as quickly as possible so that the element of redundancy is reduced to the minimum extent.

[Sl. No. 15 (Para 1.106) of Appendix to 33rd Report of PAC (7th Lok Sabha)]

### **Action Taken**

**Noted.**

2. The amount of redundancy as on 31-10-1981 in respect of HAL, Lucknow Division, was estimated at Rs. 101.43 lakhs. Out of this, components/materials worth Rs. 26.12 lakhs are expected to be utilised on Ajeet Trainer programme. In Aircraft Division, out of a total inventory of Rs. 350.00 lakhs as on 31-10-1981, materials of the value of Rs. 245.00 lakhs are ear-marked towards the present firm production programme leaving material worth Rs. 105.00 lakhs unutilised. This amount of Rs. 105.00 lakhs is expected to be reduced further to about Rs. 50.00 lakhs as and when the anticipated orders for Kiran Mk.II and Ajeet Trainer aircraft are received by HAL. The exact amount of redundancy can, however, be arrived at only on completion of the Ajeet, Kiran Mk.II and Ajeet Trainer production programmes.

[Department of Defence Production F. No. 48/42/20/81] (D (HAL)  
MDN) dated 15-6-1982]

### **Recommendation**

The Committee understood that the total number of rounds requiring change of defective cartridge cases is 99,885. Out of these a quantity of 45,475 cartridge cases had been repaired upto August, 1980 and the total expenditure incurred was Rs. 85.92 lakhs. The Committee apprehend that the expenditure likely to be incurred on the repairs of remaining cartridge cases would be equally heavy. They would therefore, like to be informed of the latest position regarding repairs of the remaining cartridge cases and the expenditure incurred thereon.

[Sl. No. 28 (Para 2.28) of Appendix to 33rd Report of PAC (7th Lok Sabha)].

### **Action Taken**

64,614 Nos. of defective cartridge cases have been repaired till June, 1981 and the total estimated cost of the repairs is Rs. 136.79 lakhs.

[Department of Defence Production U.O. No. 4/2/81/D(Prod),  
dated 12.11.1981]

### **Further Action Taken**

64,614 Nos. of defective cartridge cases have been repaired upto June, 1981. The actual/estimated cost, thereof (as per the latest information available from LAO) is indicated below:—

Year	Quantity repaired	Actual/Estimated cost in Rupees
1979-80 to 1980-81	58,972	137.46 Lakhs (Actual)
1981-82 (upto 6/81)	5,642	11.94 Lakhs (Estimated)
<b>TOTAL</b>	<b>64,614</b>	<b>149.40 Lakhs</b>

[Department of Defence Production U.O. No. 4/2/81/D(Prod),  
dated 15.7.1982]

### **Recommendation**

In view of the heavy expenditure having to be incurred on the repair of cartridge cases and on import of 50,000 brass blanks having

been ordered at a cost of Rs. 83.42 lakhs, the Committee would like the matter to be investigated with a view to fix responsibility for the lapse that had occurred at various levels and kept informed of the action taken.

[Sl. No. 29 (Para 2.29) of Appendix to 33rd Report of PAC (7th Lok Sabha)].

#### **Action Taken**

The recommendation of the Board of Enquiry is under examination. Comments of the Ordnance Factory Board thereon will follow shortly.

[Department of Defence Production U.O. No. 4/2/81/D(PROD), dated 12.11.1981]

## CHAPTER V

### RECOMMENDATIONS AND OBSERVATIONS IN RESPECT OF WHICH GOVERNMENT HAVE FURNISHED INTERIM REPLIES

—NIL—

NEW DELHI;

3 August 1982

12 Sravana, 1904 (S)

SATISH AGARWAL

*Chairman*

*Public Accounts Committee*

## PART II

### MINUTES OF THE SITTING OF THE ACTION TAKEN SUB-COMMITTEE OF THE PUBLIC ACCOUNTS COMMITTEE 1982-83 HELD ON 20 JULY, 1982 (AN).

The Committee sat from 16.00 hrs. to 17.45 hrs.

#### PRESENT

Shri Satish Agarwal—*Chairman*

#### MEMBERS

2. Shri K. Lakkappa
3. Shri G. L. Dogra
4. Shri Sunil Maitra
5. Shri Bhiku Ram Jain
6. Shri Kalyan Roy

#### ALTERNATE CONVENERS—(*By invitation*)

1. Shri B. Satyanarayan Reddy
2. Shri Uttam Rathod
3. Shri Nirmal Chatterjee
4. Shri Ram Singh Yadav

#### REPRESENTATIVES OF THE OFFICE OF C&AG

1. Shri P. P. Dhir—Addl. Dy. C&AG of India
2. Shri R. S. Gupta—Director of Receipt Audit
3. Shri L. P. Khanna—Director of Audit, P&T
4. Shri S. R. Mukherjee—Director of Audit, CWM
5. Shri G. N. Pathak—Director of Audit, Defence Services
6. Shri G. R. Sood, Joint Director (Reports)

#### SECRETARIAT

1. Shri K. C. Rastogi—*Chief Financial Committee Officer*.
2. Shri K. K. Sharma—*Senior Financial Committee Officer*.

The Sub-Committee took up for consideration and adopted the draft 117th, 118th, 119th and 120th Action Taken Reports with some amendments/modifications. The Committee also approved some amendments/modifications arising out of factual verification by Audit.

4. The amendments/modifications made in the draft 117th, 118th, 119th and 120th Report are indicated in Annexure I.

\* \* \* \* \*

*The Sub-Committee then adjourned.*

**ANNEXURE I**

*Amendments/Modifications made by the Action Taken Sub-Committee of the Public Accounts Committee in draft 117th Report at their sitting held on 20 July, 1982.*

<i>Page</i>	<i>Para</i>	<i>Line (s)</i>	<i>Amendments/Modifications</i>
9	1.10	26	<i>For "by" substitute "from"</i>
9	1.10	28	<i>Add at the end "with-in a time bound programme."</i>
12	1.14	8-12	<i>Delete the sentence :</i>  <i>"The Committee cannot help.....notice of the Audit and the Committee."</i>
13	1.16A	4	<i>For "Rs. 136.79 lakhs" substitute "Rs. 149.40 lakhs"</i>
14	1.17	7-8	<i>For the words "cases (now estimated to cost..... brass blanks"</i>  <i>substitute "cases (an expenditure of Rs. 1.49 crores is stated to have been incurred so far on repair of 64,614 out of a total of 99,885 defective cartridge cases) and in additon on import of 50,000 brass blanks."</i>
15	do.	6	<i>For "require" substitute "desire"</i>

## APPENDIX

### STATEMENT OF CONCLUSIONS AND RECOMMENDATIONS

S. No.	Para No.	Ministry/Department	Conclusion/Recommendation			
			1	2	3	4
1	1.2	Dept. of Defence Production	The 33rd Report was presented to Lok Sabha on 15 April, 1981 and contained 29 recommendations. The Committee view with concern the inordinate delay on the part of the Department of Defence Production in furnishing replies to the recommendations/observations of the Committee. According to the time schedule, the notes indicating the action taken by Government in pursuance of the recommendations and observations contained in 33rd Report duly vetted by Audit were required to be furnished to the Committee latest by 15 October, 1981. The Committee regret to observe that the replies have not only been submitted in a piecemeal fashion but have also been considerably delayed. The last reply (Recommendation at S. No. 15) was received on 17 June, 1982 that is eight months after the due date. The Committee expect that the Department would ensure that such delays are avoided in future.			
2	1.9	Do.	In Paras 1.94—1.96 of the 33rd Report (Seventh Lok Sabha), the Public Accounts Committee had pointed out that the parameters of the development programme for improving upon the capabilities of MK I aircraft were not clearly spelt out and additional			

tasks were assigned to HAL from time to time resulting not only in increase in the development expenditure from Rs. 99 lakhs to Rs. 320 lakhs but also in a delay of 7 years in the completion of the project. The Committee had further observed that it was unfortunate that the Ministry of Defence placed bulk orders for an aircraft which was still under development and which was intended to play an altogether different role than its predecessor in service with out being clear of the precise nature of the developmental tasks that were required to be done. According to the Ministry "this change (in the role of aircraft from air defence role to that of ground attack role) did not call for any basic design changes to the Gnat MK I aircraft. The improvements required in the Gnat were not in its airframe and engine but in its systems. However, changes in systems necessitated reinforcement/strengthening of certain structural areas of the airframe. .... separate manufacture of a prototype would have been time consuming and would have delayed the production of Gnat MK II and increased its cost".

The Committee find that according to the Ministry's own admission "increase in development expenditure was mainly due to progressive addition of tasks (till as late as 1978-79) which HAL were required to undertake over and above the ASRs (Air Staff Requirements) in order to improve the operational capability of the aircraft as also due to protracted period in the developmental process to remove the known defects of the Gnat MK-I especially in the

flight control system". It is thus clear that the Air Force authorities had no precise idea of the real nature of the development effort required particularly in the context of the new role the aircraft was intended for. Decision were taken in *ad hoc* manner from time to time resulting in escalation in cost as well as in heavy time over-run. Viewed in this context, the argument that separate manufacture of a prototype would have been time consuming and would have delayed the project, does not carry conviction with the Committee. The Committee would therefore reiterate the view expressed earlier that the Ministry of Defence did not take a comprehensive view of the project based on a clear perception of the requirements. The Committee expect that proper lessons would be drawn from the experience in this case and that better care and attention would be given in planning and execution of such developmental projects within a time bound programme.

Dept. of  
Defence  
Production

4 1.13

The Ministry of Defence had intimated Audit in November 1979 that the cost of redundancy on account of short closure of orders for manufacture of MK-II aircraft and reduction in the number of MK-I aircraft to be retromodified worked out to Rs. 199.64 lakhs. In addition, the cost of surplus items in respect of development programme was Rs. 9.68 lakhs. Thus the total redundancy was of the order of Rs. 209.32 lakhs. The Committee had been informed that alternate uses for material worth Rs.

95.00 lakhs had been found by HAL. This left a balance of Rs. 114.32 lakhs worth of redundant material, in regard to which the Committee had desired the Ministry to find out alternate uses at an early date so that the element of redundancy was reduced to the minimum extent. From the information now furnished by the Department of Defence Production, the Committee find that the revised estimate of redundancy as on 31 October, 1981 places the figure at Rs. 451.43 lakhs of which HAL, Lucknow Division accounts for Rs. 101.43 lakhs and Aircraft Division Bangalore for Rs. 350 lakhs. Of this, materials worth Rs. 271.12 lakhs are expected to be utilised under the present firm production programme: This would leave a balance of Rs. 180.31 lakhs worth of redundant stores still on hand. The Ministry have added that the exact amount of redundancy could be arrived at only on completion of the Ajeet, Kiran MK-II and Ajeet Trainer production programme.

Do.

5 1.14

The Committee regret that incorrect/incomplete data regarding the redundancy of materials were furnished to audit in the first instance. No explanation has been given by the Ministry with regard to the wide variation in the two sets of figures *viz.* Rs. 209.32 lakhs given to Audit in November, 1979 and Rs. 451.43 lakhs now indicated. The Ministry owe it to the Committee to explain this wide discrepancy in figures. The Committee would also be interested to know what efforts, if any, are being made to find out alternate uses for the surplus items and how long it would take to exhaust the same.

1 2

3

4

6	1.17	Deptt. of Defence Production	Dealing with another case of manufacture of defective cartridge cases for an ammunition in an Ordnance Factory, the Committee had pointed out in para 2.29 of the 33rd Report that in view of the heavy expenditure required to be incurred on the repair of the cartridge cases (an expenditure of Rs. 1.49 crores is stated to have been incurred so far on repair of 64,614 out of a total of 99,885 defective cartridge cases) and on import of 50,000 brass blanks at a cost of Rs. 83.42 lakhs, the matter should be investigated with a view to fixing responsibility for the lapses that had occurred at various levels. Elsewhere in the Report, the Committee had pointed out that the Board of Enquiry which was set up in December, 1977 to investigate the causes and circumstances leading to the defective manufacture of cartridge cases and to fix responsibility therefor, was received in August, 1980 i.e. after a delay of 2½ years. Disregarding the finding of the Board of Enquiry that "no particular individual is responsible for this (lapse)", the Committee had urged that responsibility should be fixed for the various lapses in this case. The Ministry have stated in reply that the recommendation of the Board of Enquiry is under examination. The Committee
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deplore such exercise in prevarification. Considering the heavy infructuous expenditure involved, the Committee reiterate that the matter should be investigated thoroughly and responsibility fixed for the lapses without any further delay. The Committee desire that this enquiry should be completed within three months and they should be informed of the precise action taken in the matter.

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