

ESTIMATES COMMITTEE **(1968-69)**

(FOURTH LOK SABHA)

SEVENTY-FIRST REPORT

MINISTRY OF DEFENCE

(Action taken by Government on the recommendations contained in the Twelfth Report of the Estimates Committee (Fourth Lok Sabha) on the Ministry of Defence—Defence Research and Development Organisation.)



LOK SABHA SECRETARIAT
NEW DELHI

March, 1969/Phalguna, 1890 (Saka)

Price : Rs 1.05 Paise

LIST OF AUTHORISED AGENTS FOR THE SALE OF LOK SABHA SECRETARIAT PUBLICATIONS

Sl. No.	Name of Agent	Agency No.	Sl. No.	Name of Agent	Agency No.
ANDHRA PRADESH			12	Charles Lambert & Company, 101, Mahatma Gandhi Road, Opposite Clock Tower, Fort, Bombay.	30
1.	Andhra University General Cooperative Stores Ltd., Waltair (Visakhapatnam)	8	13.	The Current Book House, Maruti Lane, Raghunath Dadaji Street, Bombay-1.	60
2.	G.R. Lakshminpathy Chetty and Sons, General Merchants and News Agents, Newpet, Chandragiri, Chittoor District.	94	14.	Deccan Book Stall, Ferguson College Road, Poona-4.	65
ASSAM			15.	M/s. Usha Book Depot, 585/A, Chira Bazar, Khan House, Girgaum Road, Bombay-2 BR.	5
3.	Western Book Depot, Pan Bazar, Gauhati.	7	MYSORE		
BIHAR			16.	M/s. Peoples Book House Opp. Jaganmohan Palace, Mysore-1.	16
4.	Amar Kitab Ghar, Post Box 78, Diagonal Road, Jamshedpur.	37	RAJASTHAN		
GUJARAT			17.	Information Centre, Government of Rajasthan, Tripolia, Jaipur City.	38
5.	Vijay Stores, Station Road, Anand.	35	UTTAR PRADESH		
6.	The New Order Book Company Ellis Bridge, Ahmedabad-6.	63	18.	Swastik Industrial Works, 59, Holi Street, Meerut City.	2
HARYANA			19.	Law Book Company, Sardar Patel Marg,, Allahabad-1.	48
7.	M/s. Prabhu Book Service, Nai Subzimandi, Gurgaon. (Haryana)	14	WEST BENGAL		
MADHYA PRADESH			20.	Granthaloka, 5/1, Ambica Mookherjee Road, Belgharia, 24 Parganas.	10
8.	Modern Book House, Shiv Vilas Palace. Indore City.	13	21.	W. Newman & Company Ltd., 3, Old Court House Street, Calcutta.	44
MAHARASHTRA			22.	Firma K.L. Mukhopadhyay. 6/1A, Bancharam Akrur Lane, Calcutta-12	82
9.	M/s. Sunderdas Gianchand, 601, Girgaum Road, Near Princess Street, Bombay-2	6	23.	M/s. Mukherji Book House, 8B, Duff Lane, Calcutta-6.	4
10.	The International Book House (Private) Limited, 9, Ash Lane, Mahatma Gandhi Road, Bombay-1.	22			
11.	The International Book Service, Deccan Gymkhana, Poona-4.	26			

C O N T E N T S

	PAGE
COMPOSITION OF THE COMMITTEE	(iii)
COMPOSITION OF STUDY GROUP 'F'	(v)
INTRODUCTION	(vii)
CHAPTER I. Report	I
CHAPTER II. Recommendations] that have been accepted by Government	2
CHAPTER III. Recommendations] which the] Committee do not desire to pursue in view of the Government's reply	28
CHAPTER IV. Recommendation in respect of which reply of Government has not been accepted by the Committee	42
CHAPTER V. Recommendations in] respect of which final replies of Government have not been received	43
APPENDICES—	
I. Ministry of Defence letter No. 23(51)/64/417/S/ D/(R&D), dt. 21-7-1967	51
II. Statement showing additional powers vested in the Director of Laboratory/Establishment	56
III. Ministry of Defence letter No. AERO/0152/67/ 7361/D(R&D), dt. 27-7-1967	57
IV. Ministry of Defence Office Memorandum No. 11 (5)/58/D(R&D), dt. 18-3-1967	58
V. Analysis of the action taken by Government on the recommendations contained in the 12th Report of the Estimates Committee (Fourth Lok Sabha) PARLI.	67

ESTIMATES COMMITTEE
(1968-69)

CHAIRMAN

Shri P. Venkatasubbaiah

MEMBERS

2. Shri B. Anjanappa
3. Shri R. S. Arumugam
4. Shri Panna Lal Barupal
5. Shri Onkar Lal Berwa
6. Shri Tridib Chaudhuri
7. Shri Ganesh Ghosh
8. Shri Hardyal Devgun
9. Shri Y. Gadilingana Goud
10. Shri J. M. Imam
11. Shri Tulsidas Jadhav
12. Shri C. Janardhanan
13. Shri S. Kandappan
14. Shri Yashwant Singh Kushwah
15. Shri K. Lakkappa
16. Shri J. M. Lobo Prabhu
17. Shri Inder J. Malhotra
18. Shri Yamuna Prasad Mandal
19. Shri Bibhuti Mishra
20. Shri F. H. Mohsin
21. Shri Kartik Oraon
22. Shri Chintamani Panigrahi
23. Shri Gajraj Singh Rao
24. Shri Erasmo de Sequeira
25. Shrimati Jayaben Shah
26. Shri Shantilal Shah

- 27. Shri Rajdeo Singh
- 28. Shri Arangil Sreedharan
- 29. Shri K. Subravelu
- 30. Shri Tula Ram

SECRETARIAT

Shri B. K. Mukherjee—*Deputy Secretary.*

Shri K.D. Chatterjee—*Under Secretary.*

**STUDY GROUP 'F' OF THE ESTIMATES COMMITTEE
(1968-69)**

CONVENER

Shri S. Kandappan

MEMBERS

2. **Shri B. Anjanappa**
3. **Shri Tridib Chaudhuri**
4. **Shri Ganesh Ghosh**
5. **Shri Y. Gadilingana Goud**
6. **Shri J. M. Imam**
7. **Shri K. Lakkappa**
8. **Shri Yamuna Prasad Mandal**
9. **Shri F. H. Mohsin**
10. **Shri Gajraj Singh Rao**
11. **Shrimati Jayaben Shah**
12. **Shri Shantilal Shah**
13. **Shri K. Subravelu**
14. **Shri Tula Ram**

INTRODUCTION

I, the Chairman of the Estimates Committee, having been authorised by the Committee to submit the Report on their behalf, present this Seventy-First Report on action taken by Government on the recommendations contained in the 12th Report of the Estimates Committee (Fourth Lok Sabha) on the Ministry of Defence—Defence Research and Development Organisation.

2. The 12th Report of the Estimates Committee (Fourth Lok Sabha) was presented to the Lok Sabha on the 12th August, 1967. Replies indicating action taken on the various recommendations contained in the Report were furnished by Government in batches between the 5th December, 1967 and the 2nd April, 1968. The Study Group 'F' of the Estimates Committee (1968-69) considered the replies received from the Ministry on the 9th August, 1968. At their sitting held on the 22nd November, 1968, the Study Group approved the draft Report which was subsequently adopted by the Committee on the 3rd February, 1969.

3. The Report has been divided into the following chapters:—

I. Report;

II. Recommendations that have been accepted by Government;

III. Recommendations which the Committee do not desire to pursue in view of the Government's reply;

IV. Recommendation in respect of which reply of Government has not been accepted by the Committee; and

V. Recommendations in respect of which final replies of Government have not been received.

4. An analysis of the action taken by Government on the recommendations contained in the 12th Report of the Estimates Committee (Fourth Lok Sabha) is given in Appendix V to this Report. It would be observed therefrom that out of 65 recommendations made in the said Report, 43 recommendations, i.e. 66.2%, have been accepted by Government. The Committee do not desire to pursue 14 recommen-

(viii)

adations, i.e. 21.5%. The reply of Government to one recommendation, i.e. 1.5%, has not been accepted by the Committee. Final replies of Government to the remaining 7 recommendations, i.e. 10.8%, have not yet been furnished to the Committee.

P. VENKATASUBBAIAH,

Chairman,

Estimates Committee.

NEW DELHI;

February 19, 1969

Magha 30, 1890 (Saka)

CHAPTER I

REPORT

The Estimates Committee are glad to observe that the points brought out in their Twelfth Report (Fourth Lok Sabha) on the Ministry of Defence—Defence Research and Development Organisation, have been replied to by Government in time and generally to their satisfaction.

The Committee hope that the information called for by them in respect of the few recommendations included in Chapter V of this Report will also be furnished at an early date.

CHAPTER II

RECOMMENDATIONS THAT HAVE BEEN ACCEPTED BY GOVERNMENT

Recommendation (Serial No. 1) Para No. 4

The Committee are glad to note the steady growth of expenditure on Defence Research and Development over the past 6 years. They would, however, like to emphasise that allocation of funds alone would not give better results; it is also necessary that whatever funds may be provided should be purposefully utilised. Viewed from this angle, the Committee appreciate the decision of the Defence Research and Development Organisation to consolidate the existing achievements before embarking on expansion programme.

REPLY OF GOVERNMENT

Noted.

[Ministry of Defence, O.M. No. 15(3)/67/D(R&D), dated the 5th December, 1967]

Recommendation (Serial No. 3) Para No. 11

The Committee are not happy at the existing composition of the Defence Research and Development Council with a preponderance of non-scientists members and feel that as at present constituted it is not perhaps in a position to fully guide and direct scientific research relating to the defence of the country. The Committee suggests that the Council as the policy making body at the highest level should include at least three eminent independent scientists so as to induct more expertise in the Council and make it more broad-based and useful. The Committee are glad to learn that the Defence Research and Development Council is in the process of reorganisation and they hope that this will be done without any delay.

REPLY OF GOVERNMENT

Government sanction amending the constitution of the Defence Research and Development Council was issued vide Ministry of Defence letter No. 50(63)/D(R&D), dated the 1st May, 1967. Accordingly, the D.G.I. and C.C., R&D have been replaced as members by Dr. D. S. Kothari, Chairman, University Grants Commission.

and Dr. S. Dhawan, Director, Indian Institute of Science, Bangalore. As the Council also includes Dr. Atma Ram, DGCSIR as member, there are now three eminent independent scientists who are members of the Council.

[Ministry of Defence, O.M. No. 15(3)/67/D(R&D), dated the 6th December, 1967.]

• **Recommendation (Serial No. 7) Para No. 14**

The Committee are unhappy to note that the R&D Council had not been functioning in the manner it was supposed to function and therefore it failed in coordinating and directing scientific research relating to the Defence of India and the development or improvement in weapons and material required by the Armed Forces. Instead of dealing with policy matters, determining priorities for research and development in defence science, and reviewing the progress of research and development work done by the Organisation, it was engaged in the earlier years in discussing minor matters pertaining to administration and procedures. The Committee hope that while the Council is being re-organised, the functions of both the Council and the Executive Committee will be clearly defined and demarcated.

REPLY OF GOVERNMENT

The R&D Council has been re-organised. It now includes two eminent Scientists from outside the Ministry of Defence viz., Dr. D. S. Kothari, Chairman, University Grants Commission and Dr. S. Dhawan, Director, Indian Institute of Science, Bangalore in addition to Director General CSIR.

2. As already explained during his evidence by the Defence Ministry representative, the R&D Council since 1965 has been giving more emphasis on policy matters relating to Defence Research, training of Scientists and associated matters and has been reviewing the progress of the various research groups in rotation. It also scrutinises the entire list of projects under execution and those proposed to be taken up in future. These functions are covered by the existing orders and a clear cut demarcation exists between the function of the R&D Council and its Executive Committee.

[Ministry of Defence, O.M. No. 15(3)/67/D(R&D), dated the 22nd December, 1967].

Recommendation (Serial No. 8) Para No. 15

The Committee are surprised that instead of meeting once every month as originally envisaged, the Executive Committee of the

R&D Council met only 10 times in the course of the last 5 years i.e. even on fewer occasions than the Council. In this connection the Committee would like to point out that if these two bodies had been provided with an efficient and vigilant Secretariat, the position would have been less discouraging. The Committee desire that while reconstituting the Council and Executive Committee, a clear provision should be made regarding frequency of meetings. They need hardly stress the importance of the Council and the Executive Committee meeting regularly in accordance with the time schedule that may be laid down in this respect.

REPLY OF GOVERNMENT

The recommendation of the Committee has been noted.

It has been decided that meetings of the R&D Council should be held at least once in four months and in no event should a meeting be delayed beyond six months. As regards the Executive Committee, it has been decided that the Committee will meet as and when required provided that a meeting is on no account deferred beyond a period of three months.

[Ministry of Defence, O.M. No. 15(3)/67/D (R&D), dated the 11th January 1968].

Recommendation (Serial No. 9) Para No. 20

In para 25 of their 94th Report (Third Lok Sabha) the Committee had suggested that the desirability of having a specialist from the private sector industry on the Defence Metallurgical Research Laboratory Advisory Committee might be considered by the Government. The Committee are glad to note that its earlier recommendation of associating a specialist from the private industry with the Advisory Committee has been accepted. They are further glad to note that provision of associating outsiders have been made in the following cases—

- (1) Defence Metallurgical Research Laboratory Advisory Committee.
- (2) Institute of Nuclear Medicine and Allied Sciences Advisory Committee.
- (3) Defence Science Laboratory, Delhi Advisory Committee.
- (4) Defence Laboratory, Jodhpur Advisory Committee.

The Committee feel that the association of scientists and specialists with the scientific activities of Defence Science Organisation, consistent with the need for keeping secrecy, will be beneficial to the organisation as a whole.

REPLY OF GOVERNMENT

Noted.

[Ministry of Defence, O.M. No. 15(3)/67/D(R&D), dated the 5th December, 1967]

Recommendation (Serial No. 10) Para No. 20

The Committee note that the authorised frequency of the meetings for Panels, Advisory Committees and Boards is rather vague. The Committee feel that if the various Committees and Panels are to serve the purpose for which they are intended, they should meet more frequently in future, and the number of meetings to be held has to be specified and adhered to.

REPLY OF GOVERNMENT

The frequency of the meetings of the R&D Panels and Advisory Committees has been clearly specified in the respective Government letters sanctioning them. It is confirmed that all R&D Panels and Advisory Committees are expected to meet at least twice a year and more frequently, if necessary. Only in the case of IAT Advisory Board one meeting in a year is held but there also the Board would be called more frequently whenever necessary.

[Ministry of Defence, O.M. No. 15(3)/67/D(R&D), dated the 22nd December, 1967].

Recommendation (Serial No. 11) Para No. 35

The Committee have noted the organisational set up and working of the Advisory Groups, namely the Scientific Advisers to the Chiefs of the Army, Navy and Air Staff and the Scientific Advisers attached to command Headquarters. They feel that with suitable modifications the Scientific Advisers to the Service Chiefs should provide a most useful and strong link between the R&D Organisation and the users (Service Headquarters).

REPLY OF GOVERNMENT

Noted. The Scientific Advisers are providing a useful link between R&D and the users. Modifications to improve this link will be made as necessary in future.

[Ministry of Defence, O.M. No. 15(3)/67/D(R&D), dated the 4th January, 1968]

Recommendation (Serial No. 14) Para No. 39

The Committee have been informed that the Technical Directors at the Headquarters and the Directors Incharge of Establishments/

Laboratories belong to the same cadre and grade and yet while the Technical Director can sanction a project upto Rs. 50,000 the Director can sanction upto Rs. 20,000 only. This in the opinion of the Committee would appear to be an anomalous position and needs to be looked into. The Committee also suggest that the Director at the Headquarters and the Directors Incharge of Establishments/Laboratories should be inter-changed after a certain period of time as such a system will add to the experience and efficiency of officers.

REPLY OF GOVERNMENT

From the information furnished to Estimates Committee from time to time it would appear that a policy of delegation of powers and of decentralisation is being increasingly followed. The HQ Technical Directors exercise the powers to sanction Development Projects to the extent of Rs. 50,000 on behalf of the SA and DGR&D purely in their capacity as Staff Officers to him. There is therefore no basic anomaly in the present practice.

As regards inter-changing of Directors at R&D HQ and Directors incharge of Establishments/Laboratories, the recommendation is noted. It may, however, be stated that this is already being done to the extent practicable.

[Ministry of Defence, O.M. No. 15(3)/67/D(R&D), dated the 11th December, 1967.]

Recommendation (Serial No. 15) Para No. 40

The Committee feel that during the Fourth Plan period greater attention should be paid to strengthen, augment and accelerate defence research and development efforts in areas where a wide gap exists and which require to be filled up to meet the country's urgent defence needs. They, however, would like to stress that the number of establishments/Laboratories set up and the magnitude of expenditure should be related to the availability of experienced scientists of whom there are not many and to the capability of these institutes to absorb gainfully the funds placed at their disposal.

REPLY OF GOVERNMENT

Noted

[Ministry of Defence O.M. No. 15(3)/67/(R&D), dated the 5th December, 1967].

Recommendation (Serial No. 16) Para No. 41

The Committee are unhappy to note the delay in the adoption of the model constitution for R&D Establishments and Laboratories.

They would, however, like that the Governing Councils for the Laboratories are carefully constituted so that they are able to give proper guidance. The Committee hope that introduction of the Model Constitution in the Establishments/Laboratories of the Defence R&D Organisation will enable them to carry on the work of research and development efficiently and without any administrative delays.

REPLY OF GOVERNMENT

Government approval for adoption of the Model Constitution for R&D Laboratories/Establishments has since been issued vide Government of India letter No. 23(51) 64/417[S/D(R&D) dated 21 July, 67 (copy at Appendix I). Action is in hand to constitute the Governing Councils for the different R&D Establishments and to lay down their terms of reference etc. This is expected to be completed in about 3 months time.

[Ministry of Defence, O.M. No. 15(3)/67/D(R&D), dated the 22nd December, 1967.]

Recommendation (Serial No. 17) Para No. 42

The Committee realise that it may be difficult for every Defence Research Laboratory or Establishment to reach the optimum size. Efforts should, however, be directed to limit their expansion because beyond a certain size the principle of diminishing returns acts strongly against the added investment.

REPLY OF GOVERNMENT

Noted. As has already been explained, the optimum size of a Defence R&D Establishment/Laboratory cannot be rigidly defined in quantitative terms. It depends upon a variety of considerations, some of which are:

- (a) The range and scope of the R&D tasks in the particular field or specialisation assigned to the Estab./Lab;
- (b) The various specialised facilities etc. and instrumentation required to be made available for the speedy execution of the development tasks;
- (c) Various new fields that may have to be added to the existing establishments for economic and other considerations;
- (d) The level of efficiency of the scientific and technical staff.

The consideration of 'optimum size' would, therefore, vary from one Establishment/Laboratory to another.

[Ministry of Defence O.M. No. 15(3)/67/D (R&D) dated the 5th December, 1967].

Recommendation (Serial No. 18) Para No. 44

While the Committee accept that the Solidstate Physics Division of the National Physical Laboratory and Solidstate Physics Department of the Delhi University are only a small affair as compared to the Solidstate Physics Laboratory, they are not much impressed with the achievement of the Solidstate Physics Laboratory. They regret that none of the projects have so far reached a production stage. They would like that there is a closer coordination and cooperation between this Laboratory, Central Electronics Engineering Research Institute, Pilani, Solidstate Physics Division of the National Physical Laboratory and Solidstate Physics Department of the Delhi University at institutional levels. In this connection the Committee would like to draw attention to the observations made in their 103rd Report (Third Lok Sabha) relating to the National Physical Laboratory, CSIR.

"The Committee are not happy about the existing arrangements for collaboration merely on personal level between the Solidstate Physics Division of the National Physical Laboratory and the Solidstate Physics Laboratory of the Ministry of Defence. The Committee recommend that to avoid infructuous duplication of research efforts between these two institutions, there should be closer collaboration on institutional level."

REPLY OF GOVERNMENT

The Solidstate Physics Laboratory (SPL) was set up towards the middle of 1962. The first 2 to 3 years were spent in recruitment and training of scientific staff in this new field, procurement and installation of scientific equipment, and establishment of facilities by way of buildings and services.

2. The Defence Electronics Research Committee formally approved the undertaking of 19 projects at the Laboratory in Oct. 1965. The target dates of completion of most of these projects are around 1969-71. However, the development work in respect of the following projects has been successfully completed:—

- (a) Semi-conductor grade silicon single crystals.
- (b) Development of thermo-electric cooler modules.
- (c) Development of solar cells.
- (d) Microwave high-power isolator for the radar set under production at BEL.

3. The development work on projects for button type nickel-cadmium cell and one type of infra-red detector is nearing completion. The work on pilot plant in respect of semi-conductor grade silicon crystals from commercial silicon has been sanctioned by the Government and has since started at the Laboratory. In the light of the progress so far made it would appear that work on the projects of the Laboratory is progressing satisfactorily.

4. As regards closer coordination and cooperation between SPL, Central Electronics Engineering Research Institute (CEERI), Pilani, Solidstate Physics Division of the National Physical Laboratory (NPL) and Solidstate Physics Department of the Delhi University at the institutional level, it may be mentioned that both Director, SPL and Director of Electronics at R&D HQ, are on the Executive Council of CEERI, and the Director, CEERI is in turn a member of the Defence Electronics Research Committee. Director, SPL is also a member of the Faculty of Science of the Delhi University.

5. Though liaison at the working level already exists between SPL and the Solidstate Physics Division of the National Physical Laboratory, in order to have increased collaboration between them at the institutional level, as suggested by the Estimates Committee, the representative of NPL is being invited to be a member of the Defence Electronics Research Committee and in turn, it is proposed to seek nomination of Director, SPL on the Executive Council of NPL.

[Ministry of Defence, O.M. No. 15(3)/67/D(R&D), dated the 11th January, 1968].

Recommendations (Serial Nos. 19 & 20) Para No. 45

19. The Committee have viewed with great concern the circumstances in which the Defence Food Research Laboratory was set up. They are surprised that a laboratory of the CSIR which is maintained by the Govt. of India should have expressed its inability to undertake the defence work on the plea of being preoccupied. This only shows lack of coordination between the Defence R&D Organisation and the CSIR. The Committee hope that research laboratories under the CSIR will not in future refuse to undertake research work whenever approached by the Defence authorities.

20. The Committee would also urge that closer coordination is maintained between Defence Food Research Laboratory and Central Food Technological Research Institute and only those problems which are exclusively of defence interest and for which facilities do not exist in the Central Food Technological Research Institute should be undertaken by the Defence Food Research Laboratory. It should

be the endeavour of the Govt. to utilise the research facilities available in the Central Food Technological Research Institute to the maximum possible extent.

REPLY OF GOVERNMENT

The Defence Food Research Laboratory was set up on the specific understanding that this Laboratory would deal with problems which are considered exclusive to Defence and on which the closest cooperation between Defence Scientists, Defence Services and Army Medical Corps would be an unavoidable pre-requisite. Problems on food research, particularly the basic problems, as could be dealt with adequately by Central Food Technological Research Institute are passed on to the latter. A Joint Defence Coordination Committee consisting of three members from Defence Food Research Laboratory and three members from Central Food Technological Research Institute reviews the Defence Food Projects for effecting coordination and also for isolating problems as to which agency, i.e. DFRL or CFTRI or both should undertake a particular problem.

[Ministry of Defence, O.M. No. 15(3)/67/D(R&D), dated the 20th February, 1968].

Recommendation (Serial No. 24) Para No. 49

The Committee are not fully convinced with the reasons advanced for shifting major portion of the Defence Research Laboratory (Materials) Kanpur to Gwalior. They realise that there is congestion at Kanpur and sufficient space is not available to meet the needed expansion and development of the Laboratory. Yet the Committee are inclined to feel that Kanpur has a clear locational advantage over Gwalior, being a centre of industrial units and technical institutions and having connected research facilities. They would like to impress upon the Government the desirability of carefully considering all the pros and cons before any laboratory is shifted from one place to another. In this connection the Committee would like to invite the attention of the Govt. to a similar observation they have made in para 16 of their 94th Report (Third Lok Sabha) regarding the shifting of the Defence Metallurgical Research Laboratory from Ishapore to Hyderabad in 1963-64.

REPLY OF GOVERNMENT

Noted. It may however be clarified that while the proposal for expansion of Defence Research Laboratory (Materials) Kanpur was under consideration, it became apparent that it was not possible to secure accommodation in the existing campus of this Laboratory.

At that stage, Madhya Pradesh Government offered a fairly well equipped Laboratory consisting of equipment valued at Rs. 6.22 lakhs, buildings costing about Rs. 2.07 lakhs and about 14 acres of land free of cost. Subsequently, they offered another 64 acres of land free of cost at a distance of 1-1/2 miles from the Laboratory. The offer was examined and found to be of advantage for further expansion of activities in materials research.

[Ministry of Defence, O.M. No. 15(3)/67/D(R&D), dated the 2nd March, 1968]

Recommendation (Serial No. 26) Para No. 50

The Committee would like to stress that as far as possible the Research Institutes under the Defence Research and Development Organisation should be located in close proximity to areas where industrial, technical and operational facilities are available.

REPLY OF GOVERNMENT

Noted.

[Ministry of Defence, O.M. No. 15(3)/67/D(R&D), dated the 23rd January, 1968]

Recommendation (Serial No. 30) Para No. 54

The Committee are glad to know that the Director of Laboratory/Establishment has been vested with increased powers in respect of certain items and that the question of vesting powers in respect of other items is still under consideration. The Committee hope that there will be progressive decentralisation of responsibility and delegation of as much authority as possible from the Scientific Adviser to the Technical Directors and to the Directors of Establishments/Laboratories. The Committee would like to urge that the Director of an Establishment/Laboratory should on his part delegate adequate financial/administrative powers to the Administrative Officer so that he may be relieved of the routine administrative work and may devote greater part of his time to the performance of technical duties.

REPLY OF GOVERNMENT

Additional powers recently delegated to Heads of Establishments/Laboratories are shown in Appendix II.

2. All Heads of Establishment/Laboratories have themselves delegated some of the financial powers vested in them to one or more of their officers subordinate to them, either to the full extent, or to a limited extent.

3. Some of the powers vested in the Governing Councils, set up under the Model Constitution, can also be delegated to Heads of Establishments/Laboratories at the discretion of the Governing Councils.

[Ministry of Defence, O.M. No. 15(3)/67/D(R&D), dated the 19th January, 1968].

Recommendation (Serial No. 31) Para No. 55

The Committee attach great importance to the induction of talented young men into the Defence Science Service. The Committee cannot over-emphasize the importance of giving suitable incentives to the service officers and also ensuring to them adequate career prospects within the organisation. The Committee hope that Government would take an early decision on the question of rationalisation of the scale of pay.

REPLY OF GOVERNMENT

A system of giving advance increments and cash awards to talented scientists based on the outstanding work done by them already exists in R&D Organisation.

The system of promotion by merit up to the grade of Directors grade II is already in vogue in D.S.S. As the load of R&D work varies from discipline to discipline it is not easy to have a uniform system of promotion prospects for the scientists belonging to different specialities. A proposal to introduce a system of time scale promotion combined with merit up to the grade of P.Sc.O. is under consideration.

[Ministry of Defence, O.M. No. 15(3)/67/D(R&D), dated the 18th January, 1968].

Recommendation (Serial No. 33) Para No. 57

The Committee note that there is now no open unhealthy rivalry between the Service and Civilian officers. They would, however, stress that utmost vigilance be exercised in the matter and all cases of covert or overt rivalry promptly investigated and necessary remedial action taken so that the work of the Organisation does not suffer. The Committee would like to emphasise that the laboratories and the establishments should be manned by officers—Service or Civil—who are eminently qualified and experienced in the latest developments in the field of science so that an atmosphere could be created in which both service and civil elements could co-exist and co-operate for the benefit of the Organisation.

REPLY OF GOVERNMENT

Noted.

[Ministry of Defence, O.M. No. 15(3)/67/D(R&D), dated the 5th December, 1967].

Recommendation (Serial No. 34) Para No. 59

The Committee note that the average time taken from the advertisement of a Defence Science Service post by UPSC to the appointment of a person from outside is about one year. The Committee consider this time-lag to be rather excessive. The Committee would urge that steps should be taken to reduce the time-lag so that a candidate for a Defence Science Service post could be appointed within a period of six months from the date of the advertisement. The Committee also consider that due to administrative delay the period of seven to eight months taken for the selection of a departmental candidate is also on the high side. This period should also be reduced.

REPLY OF GOVERNMENT

One of the major factors involving delay in appointment is the police verification of character and antecedents of the selected candidate. In order to eliminate this delay, a proposal to issue offers of appointment first on a provisional basis and to verify the character and antecedents of the candidates after their appointment was examined by Government but the proposal was not found acceptable for security reasons. Notwithstanding this, every attempt is being made to finalize the appointments within a period of 6 to 8 months in the case of persons from outside and 2 to 3 months for appointments of departmental candidates that involve no police verification.

[Ministry of Defence, O.M. No. 15(3)/67/D(R&D), dated the 11th January, 1968].

Recommendation (Serial No. 35) Para No. 60

The Committee are concerned to note the large number of vacancies in the category of Scientific/Technical Officers (Gazetted and non-Gazetted) in the Defence R&D Organisation. They feel that administrative delays involving recruitment of technical hands can be avoided with proper planning at all levels. As regards the availability of technical/scientific personnel, the Committee would like to invite the attention of the Ministry to the recommendation in para 32 of their 94th Report on the Ministry of Defence; Defence

Research and Development Organisation—Defence Metallurgical Research Laboratory, Hyderabad.

REPLY OF GOVERNMENT

Estimates Committee's recommendation in para 32 of their 94th report on Defence Research & Development Organisation—Defence Metallurgical Research Laboratory, Hyderabad—has been noted and acted upon. Improvements have been effected and will continue to be effected in Service Conditions, working conditions and laboratory facilities. The Defence R&D Council have already constituted a Committee composed of Scientific Adviser to DM, DG, CSIR and a senior officer from the Ministry of Education, to examine the possibility of imparting technical training in the Institutes of Technology and other institutions in the country and utilise the maximum indigenous resources available. Arising out of this, *Ad-hoc* Committees have been constituted by the Government to draw up programmes for training of scientists in special fields like Rocketry, Missiles and Radar Technology, on a national basis, taking into account the resources available in the country as a whole and having regard to defence requirements.

2. Defence R&D Organisation have also sent scientists abroad for training under various schemes and it is proposed to continue to use these facilities. Symposia and seminars in specialised fields, are arranged by the R&D Organisation, to provide a forum for R&D scientists to meet, discuss and exchange ideas with reputed scientists in India and abroad. For the same purpose, R&D scientists are deputed, depending upon circumstances and the field of specialisations involved, to attend Scientific Conferences, symposia, etc., held by other Organisations and societies.

3. Vigilance is being maintained to reduce the time-lag in recruitment and promotion of officers and staff. In 1967, 172 gazetted posts and 192 non-gazetted posts have been filled by promotion. In the same year, 158 gazetted posts have been filled by direct recruitment through the UPSC and a number of non-gazetted posts filled by the concerned Establishments/Laboratories. Action was initiated some time ago to ensure that recruitment of technical hands and filling of vacant posts, is handled without administrative delays.

[Ministry of Defence, O.M. No. 15(3)/67/D(R&D), dated the 1st March, 1968].

Recommendation (Serial No. 37) Para No. 62

The Committee are glad to note the various incentives that are being provided to the Civilian Scientists and to the Service Tech-

nologists in the Defence R&D Organisation. They, however, are concerned to note the number of Scientists who have resigned their jobs in the Organisation during the last two years. The Committee feel that keeping the staff satisfied plays a great part in the successful running of a research organisation. A research organisation like this should provide adequate incentives to the Scientists so that they do not seek their prospects outside the Organisation.

REPLY OF GOVERNMENT

Migration of Scientists is more or less a general problem affecting all research organisations. Defence R&D is alive to this problem. The various measures adopted by the R&D Organisation to give job satisfaction to the scientists and to ensure their career prospects are given below:—

- (a) Encouraging the R&D Scientists to publish their research effort on unclassified work in international scientific journals.
- (b) Exchange of ideas with scientists in the same field by allowing them to attend Conferences/Symposia/Seminars..
- (c) Advance Increments for meritorious work.
- (d) Cash Awards.
- (e) Deputation to foreign countries to receive advanced training in their field of specialisation.
- (f) Rotation of DSS personnel within the R&D Establishments to offer change of place and varied experience within the same discipline.

In addition one or two proposals to improve their prospects in the R&D Organisation are under consideration of R&D Organisation.

It is hoped that these incentives to the scientists will prevent them from seeking prospects outside the R&D Organisation.

[Ministry of Defence, O.M. No. 15(3)/67/D(R&D), dated the 6th February, 1968]

Recommendation (Serial No. 38) para No. 62

The Committee feel that a Junior Scientist in the Defence Research and Development Organisation needs some encouragement in terms of money but what he will value much more is better facilities, better opportunities for work and better treatment. The Committee suggest that in order to sustain and inspire a young talented scientist, he may be entrusted with independent charge of a certain project so that he can develop self-confidence and initiative.

REPLY OF GOVERNMENT

Government have noted the suggestion made by the Committee. In fact, in suitable cases, Junior Scientists are entrusted with independent charge of minor projects. They are also afforded, wherever possible, facilities for research and research guidance. Consistent with the requirement of their discipline, they are given opportunities for advanced training both in India and abroad. Cash Awards and advance increments are also given in recognition of meritorious work.

[Ministry of Defence O.M. No. 13(3)/67/D(R&D) dated the 6th February, 1968]

Recommendation (Serial No. 39) Para No. 64

The Committee note the procedures for the formulation of budget estimates of the Defence Research and Development Orgn. They also note the provision for procurement of stores in India and abroad. The Committee feel concerned that indents to the extent of Rs. 235 lakhs were outstanding with Defence Research and Development Orgn. at the beginning of the year (1966) and only indents worth Rs. 149 lakhs were expected to be materialised during the course of the year. The Committee cannot too strongly emphasise the need for expediting the purchases which are being effected by the Defence R&D Orgn. through the agencies of India Supply Mission, Washington, Director General, Supply and Disposal, and the Ordnance Depots.

REPLY OF GOVERNMENT

Noted.

In reply to the observations contained in Para 77 of the 94th Report (Third Lok Sabha), the various measures in vogue/taken to speed up indents received from Defence Services indentors were communicated vide this Ministry's OM No. 15/21(66)/D (R&D) dated 12-9-66. The case of materialisation has shown improvement, in that the quantum of materialisation in 1966-67 was to the extent of Rs. 234.84 lakhs as against anticipated materialisation of Rs. 149.0 lakhs visualised at the time of framing the estimates in November, 1965. The volume of outstanding indents has also shown a downward trend in that on 1-4-67 it was Rs. 200.04 lakhs.

[Ministry of Defence O.M. No. 15(3)/67/D (R&D) dated the 24th January, 1968]

Recommendation (Serial No. 40) Para No. 66

The Committee regret to note the heavy shortfall between the budget allotted and physical targets achieved in respect of R&D Works during 1961-62 and 1964-65, caused by non-materialisation of sanctions, late release of stores etc., slow progress of works and re-tendering etc. The Committee suggest that the remedial measures taken by Government to avoid the recurrence of these shortfalls should also include realistic budgetary allotment on works projects in addition to plugging the loopholes in the existing procedure of works administration.

REPLY OF GOVERNMENT

In matters affecting the provision of works budget and works administration, R&D Organisation follows a uniform prescribed procedure for all the three Services. The Budget forecast normally comprises the actual requirement of funds assessed by Engineers in respect of works projects under execution and anticipated requirement of funds for those awaiting sanction of the Competent Financial Authority and likely to be released during the ensuing year.

To overcome the administrative bottlenecks which might impede the issue of Admin. Approval by the Competent Financial Authority, R&D HQ have started a system of periodical review meetings at the level of a Joint Secretary. This machinery not only helps to take decisions on points of difference but also discusses the progress of works projects under execution and fixes target dates of completion to ensure overall progress.

Commencing from the year 1965-66, the Government have initiated a system of having a Study Group to undertake preliminary scrutiny of budget forecasts. This Study Group includes representatives of Engineers, Finance (Defence) and the Ministry of Defence. It endeavours to make a realistic appraisal of the works projects both under execution and those under sanction and determines the anticipated requirement of funds. This measure has tightened up the provisioning of funds.

It is hoped that with the measures enumerated above, shortfall in budgetary allotment and actual expenditure as happened during 1961-62 and 1964-65 would not recur in future.

[Ministry of Defence O.M. No. 15(3)/67/D(R&D) dated the 11th January, 1968].

Recommendation (Serial No. 41) Para No. 67

The Committee note with concern that the Fourth Plan proposals of the Defence Research and Development Organisation indicate only the broad areas in which R&D effort will be intensified and do not specify the projects in accordance with their relative significance from the point of view of defence, import substitutions, development of indigenous know-how, etc. The Committee feel that the Planning Commission which is concerned with allocation of resources as also the Defence Research and Development Council which is to apportion the available resources among the different units, should be provided well in advance with such vital statistics as number of projects proposed to be taken up under various laboratories/establishments and their significance in national economy, the physical targets the percentage of machinery and equipment that would have to be imported, the extent of import substitution likely to be achieved, etc. so that it could be possible for the planners to examine the programme of each Laboratory/Establishment on a realistic basis in the context of national economy.

REPLY OF GOVERNMENT

Almost all R&D Establishments/Laboratories have since drawn up five year plans of works for the Fourth Plan period which have been finalised after consultation with the user Services, the Ministry of Defence and the Department of Defence Production. These plans aim at meeting the services requirements of weapons and equipment, stores and materials, etc., through indigenous research and development and give a forecast of the projects proposed to be undertaken during the period of the plan and the manner in which the tasks will be executed. The additional requirements of manpower, machinery and equipment and other facilities required for build up of the R&D effort to meet the futuristic requirements of the Services and the additional requirements of buildings and accommodation, as well as the annual targets, have been reflected in these plans.

However, in the meantime, the Defence Plan (of which the R&D Plan is a part), is being rephased to coincide with the revised National Five-Year Plan so as to cover the period 1969-70 to 1973-74. Accordingly, the task of rephasing the Five Year R&D plans has also been taken in hand. The Plan will be submitted to the R&D Council for approval. The Planning Commission is not directly concerned with the details of the Defence Plan. Active liaison is being main-

tained with the various Panels of the Commission to meet the requirements of Defence as necessary.

[Ministry of Defence O.M. No. 15(3)/67/D(R&D) dated the 1st April, 1968].

• **Recommendation (Serial No. 42) Para No. 68**

The Committee are glad to note that the procedure for the sanction of foreign exchange has been streamlined. They also note with satisfaction the extent of utilisation of foreign exchange by the R and D Organisation. They would like to stress that where there are inescapable demands, there should be no obstacles in the release of foreign exchange.

REPLY OF GOVERNMENT

Noted.

[Ministry of Defence O.M. No. 15(3)/67/D (R&D) dated the 22nd December, 1967].

Recommendation (Serial No. 43) Para No. 69

The Committee are glad to note the efforts of Defence R&D Organisation with regard to import substitution and self-reliance in various fields of defence science and technology. The Committee consider that these efforts need not necessarily be limited within the organisation only. For complete defence preparedness it is necessary to create a sense of participation in the private sector also which may be called upon to meet the defence requirements in case of urgent necessity. The Committee would like to urge that it should be the endeavour of the Organisation to break the dependence on foreign equipment as early as possible.

REPLY OF GOVERNMENT

Government share the anxiety of the Committee in regard to the necessity for breaking the dependence on foreign sources as early as possible as also of the requirement to create a sense of participation in the private sector to meet defence requirements. For this purpose, the Department of Defence Supply was set-up in November 1965 with the object of handling in a concerted manner the task of import substitution in respect of defence stores with the participa-

tion of the private sector. A large number of items, which were hitherto being imported, have been displayed in sample rooms located in important industrial centres with a view to attracting quotations from entrepreneurs for the purpose of placing orders. Orders totalling to a value of about Rs. 15 crores have been placed so far, out of which supplies of the value of over Rs. 1 crore have already materialised. Arrangements have also been made to provide facilities for the procurement of raw materials, balancing machinery and technical advice and assistance for development by a number of technical committees formed under this Department. Close coordination is maintained between the R&D Organisation and the private sector in this regard.

[Ministry of Defence O.M. No. 15(3)/67/D (R&D) dated the 22nd March, 1968].

Recommendation (Serial No. 45) Para No. 72

The Committee, however, like to impress upon the Government the necessity of taking immediate steps to avoid delay in installation of equipments already purchased or imported at heavy cost. Delay in installation of a set of instrumentation equipment costing Rs. 11,15,784 at Terminal Ballistics Research Laboratory is alarming. In para 58 of their 94th Report (Third Lok Sabha) the Committee had occasion to make an observation on the abnormal delay in purchasing and installing the powder Metallurgy Plant in the Defence Metallurgical Research Laboratory, Hyderabad. They are constrained to observe that this is yet another instance of failure to install the equipment immediately on receipt. They feel that the delay could have been avoided through proper planning and coordination of activities by the Defence R&D Organisation and other agencies concerned. The Committee hope that such cases will not arise in future.

REPLY OF GOVERNMENT

Action has already been taken to ensure that no avoidable delays occur in installation and utilization of equipment purchased or imported at heavy cost. The heads of Estts./Labs. are required to certify at the time of initiation of proposals for procurement of equipment that all facilities exist for installation and operation of an equipment without delay. Estts./Labs. have also been instructed to submit quarterly returns showing the progress. A close watch on equipment utilization is being kept.

[Ministry of Defence O.M. No. 15(3)/67/D (R&D) dated the 4th January, 1968].

Recommendation (Serial No. 47) Para No. 73

The Committee feel that since defence research and development cannot progress, severed from the main current of scientific and technical effort in the country and abroad, active effort must be made at all times to forge and develop closer liaison with the CSIR and other scientific organisations in the country. They recommend that more tasks which can be accomplished by the CSIR and National Laboratories should be given to them and the facilities for research should be utilised to the maximum extent possible. The Defence panels and advisory committees should however ensure that the tasks allocated are well defined and specific.

REPLY OF GOVERNMENT

Noted. This is being actively pursued.

[Ministry of Defence O.M. No. 15(3)/67/D(R&D) dated the 5th December, 1967].

Recommendation (Serial No. 48) Para No. 74

The Committee commend the steps taken by the Defence R&D Organisation to maintain liaison with Indian Institutes of Technology and Universities. The Committee hope that energetic steps will be taken to enlarge the scope of collaboration with learned bodies like Indian Association for Cultivation of Science, Natinal Institute of Sciences of India etc.

REPLY OF GOVERNMENT

Fellows of the National Institute of Sciences of India have been requested to visit Defence Laboratories/Establishments whenever possible, to obtain a general idea of defence requirements and the scope of defence R&D effort. Special group discussions have been arranged on important topics of Defence interest such as rare chemicals. Symposia on topics of Defence interest are also being organised under the joint auspices of the National Institute of Sciences of India and Defence R&D Organisation.

In respect of other learned bodies like the Indian Association for Cultivation of Science, etc., problems of defence interest are being referred to them under the grants-in-aid scheme. Opportunities such as Symposia, Seminar etc. are also availed of for familiarising such authorities with the overall requirements of defence research and thus encouraging them to help in Defence R&D problems.

[Ministry of Defence O.M. No. 15(3)/67/D(R&D) dated the 6th February, 1968].

Recommendation (Serial No. 49) Para No. 75

The Committee note the arrangements for giving grants-in-aid to the Universities for undertaking research on problems of interest to defence. From the list of projects sanctioned to universities/research Institutes upto October 1966, the Committee find that no project has been assigned to Bengal Engineering College, Sibpur, which is one of the oldest technical institutions in this country. While the Committee appreciate that as per the Government of India order grant-in-aid can be given only to a person or body which is independent of the Government they see no reason why an institution should not be approached for undertaking research on specific defence problems without any grant-in-aid. The Committee feel that the Defence R&D Organisation should make a special effort to get the Government Engineering institutions and similar other institutions which have necessary facilities, interested in defence research.

REPLY OF GOVERNMENT

Apart from the Grants-in-Aid Scheme in respect of non-governmental institutions/universities etc. for undertaking research on problems of Defence interest, the question of farming out defence-oriented projects to Government institutions including Engineering Colleges without grant-in-aid will also be pursued.

[Ministry of Defence O.M. No. 15(3)/67/D (R&D) dated the 22nd March, 1968].

Recommendation (Serial No. 50) Para No. 76

While the Committee note the efforts made by the Defence Research and Development Organisation in utilising the facilities for research existing in the Universities, they feel that it is necessary to conduct a review of the working of grants-in-aid scheme which has been in operation for over four years. The Committee suggest that the views of the Universities receiving the grants may be obtained and thereafter the procedures and the policies of the entire scheme may be reviewed by a study team in which University people may be associated.

REPLY OF GOVERNMENT

Government accept the recommendation of the Estimates Committee.

[Ministry of Defence O.M. No. 15(3)/67/D (R&D) dated the 19th March, 1968].

Recommendation (Serial No. 51) Para No. 77

The Committee are glad to note that Universities are showing increasing interest in the journals brought out by Defence R&D Organisation. They however, suggest that not only Universities but also Engineering Colleges and all the important Institutes of Technology in the country should be encouraged to subscribe to these journals with a view to popularise the periodicals among science students so that they know something about defence science and get interested in it. The Committee urge that it should be the endeavour of the R&D Organisation to raise the standard of the contents of their publications so as to merit international recognition. They would also suggest that the information contained in the publication should relate more to what is happening in their own research laboratories than to what is happening outside.

REPLY OF GOVERNMENT

Special steps have already been taken to popularise the Defence R&D publications, not only among Universities but also among the Engineering Colleges and important Institutes of Technology in the country and the response has been encouraging. Further efforts are being made to step up the circulation.

Articles on topics of defence interest are also being received, for publication in defence R&D periodicals, from various engineering colleges and technological institutes.

Efforts have been made and will continue to be made to raise the standard of the contents of defence R&D publications. Some of the defence R&D work reported in these periodicals has received recognition abroad.

[Ministry of Defence O.M. No. 15(3)/67/D (R&D), dated the 1st March, 1968].

Recommendation (Serial No. 53) Para No. 78

The Committee realise that participation of Defence Research Laboratories/Establishments in exhibitions does obviously affect the normal R&D work, yet it has to be viewed against the gain from the angle of opportunities that these exhibitions provide for a wider dissemination of information concerning defence effort (including R&D).

REPLY OF GOVERNMENT

Noted.

[Ministry of Defence O.M. No. 15(3)/67/D (R&D), dated the 1st December, 1967].

Recommendation (Serial No. 54) Para No. 79

The Committee note that the R&D Conference is an annual feature of the Defence Research & Development Organisation. This enables the Principal Staff Officers, Directors of Field Units and Technical Directors at the Headquarters to take a co-ordinated look once a year at the Defence R&D efforts as a whole to assess how well the Organisation is fulfilling its charter of duties and to discuss measures needed to tackle various organisational and other problems to further the objectives. The Conference provides an occasion for self-introspection. The Committee are glad to note that the discussions held in these conferences are not only free and frank but very useful and stimulating and are bound to lead to fruitful results. The Committee commend the business like manner in which the proceedings are conducted at these Conferences and hope that the Organisation will continue to benefit from such Conferences.

REPLY OF GOVERNMENT

Noted.

[Ministry of Defence O.M. No. 15(3)/67/D (R&D), dated the 5th December, 1967].

Recommendation (Serial No. 55) Para No. 80

The Committee have noted the efforts made by the Defence R&D Organisation in locating as well as arranging facilities for training of defence scientists. They, however, consider that there is still much scope as well as urgent need for further exploration of training facilities in special important fields like radar, electronics, guided missiles, etc. and they would like to stress the need for taking proper steps in this regard, as speedily as possible.

REPLY OF GOVERNMENT

Government accept the Committee's views in the above recommendation. Two ad-hoc committees have been set up in this context:

- (a) to draw up a programme for training of scientists in Rocketry and Missiles on National basis taking into account the resources available in the country as a whole and having regard to defence requirements.
- (b) to prepare a forward plan for the next five years for reinforcing training facilities in Radar Technology in the country as a whole.

The recommendations of the above Committees are awaited.

[Ministry of Defence O.M. No. 15(3)/67/D (R&D), dated the 1st March, 1968].

Recommendation (Serial No. 56) Para No. 82

The Committee have noted that there is no representative from the CSIR on the Advisory Board which advises the Ministry of Defence on matters concerned with the Institute of Armament Technology. The Committee would urge that in the interest of better coordination, CSIR should be represented on this board.

REPLY OF GOVERNMENT

Governing Councils are being appointed for all R&D Laboratories/Establishments as per the Model Constitution. The recommendation of the Estimates Committee will be kept in view while constituting the council concerned with the Institute of Armament Technology.

[Ministry of Defence O.M. No. 15(3)/67/D (R&D), dated the 1st March, 1968].

Recommendation (Serial No. 57) Para No. 83

The Committee are unhappy to note that it has not always been possible for the Services to spare officers with the consequence that the courses had to be made of a shorter duration. The Committee are of the view that shortening of a course would only result in reducing the competence of the trainees and would vitally affect the interest of the Defence Science and Technology. The Committee would like to urge that the question of duration of the courses should be reviewed as early as possible. They would also urge that when a particular course is started it should be assured that the intake capacity is fully utilised.

REPLY OF GOVERNMENT

No difficulties were experienced in running courses for Army and Air Force Officers by I.A.T. either with regard to the intake capacity of a course or the duration of a course. The difficulties were with Naval Officers for longer courses as the Naval HQrs. could not spare officers for 76 weeks. 11 weeks courses were therefore arranged for the benefit of the Naval officers. Recently, the matter has been discussed with the Naval HQrs. and they have

agreed to depute Naval Officers for the full duration of the longer courses.

[Ministry of Defence O.M. No. 15(3)/67/D (R&D), dated the 2nd March, 1968].

Recommendation (Serial No. 58) Para No. 84

The Committee note with concern that the number of courses conducted by the Institute of Work Study has varied from year to year. Even the intake capacity for the various courses has not been fully utilised. The Committee cannot too strongly stress the need for fuller utilisation of the existing capacity and would suggest that the Ministry may investigate the reasons for short-fall and take remedial action.

REPLY OF GOVERNMENT

The Ministry has already investigated into the reasons for short-fall in the intake capacity and number of courses conducted by the D.I.W.S. The shortfall is partly due to difficulties in recruiting trained instructors in this new discipline from the open market. Recruitment had to be restricted to those trained by the D.I.W.S. However, the complement of staff is now almost full, 9 officers against the sanctioned strength of 10 being in position. The other reason was that it was not always possible for the Service HQrs to release officers for these courses owing to exigencies of Service e.g. conflicts with China and Pakistan in 1962 and 1965 respectively. The position now in this respect also is better.

[Ministry of Defence O.M. No. 15(3)/67/D (R&D), dated the 30th March, 1968].

Recommendation (Serial No. 59) Para No. 85

The Committee feel that since work study has been accepted as an integral part of defence science, efforts should be made to fully exploit it on proper lines. They would like to recommend that persons who have been trained in work study, should be engaged on similar work wherever they are posted with a view to derive maximum advantage from their training.

REPLY OF GOVERNMENT

Government have noted the recommendation.

[Ministry of Defence O.M. No. 15(3)/67/D (R&D), dated the 2nd March, 1968].

Recommendation (Serial No. 60) Para No. 86

The Committee regret to note that since its inception in the late 1962, no training courses were conducted in the Fire Service Research, Development and Training Establishment for Officers till 1965 mainly because of the inability of the Services to spare their officers. They hope that in future better use of the training facilities existing at the Establishments will be made by the Services. It is regrettable that Services, failed to take advantage of the facilities during 1962—65.

REPLY OF GOVERNMENT

Although the course exclusively meant for officers could not be started till 1965 due to the difficulties arising out of the emergency, about 60 Service officers were trained, along with non-gazetted staff in the various general courses run by FSRDTE from July 62 to March, 1965.

Since May, 1965, this officers' course is being run and the training facilities are being adequately utilised by the Services.

[Ministry of Defence O.M. No. 15(3)/67/D (R&D), dated the 2nd March, 1968].

Recommendation (Serial No. 64) Para No. 90

The Committee feel that there is too much of stress on the secrecy aspect in Defence Science which is not necessary. The Committee recommend that the question of secrecy and classification in defence scientific research should be examined from time to time with a view to keep it to the barest minimum.

REPLY OF GOVERNMENT

Noted.

[Ministry of Defence O.M. No. 15(3)/67/D (R&D), dated the 5th December, 1967].

CHAPTER III

RECOMMENDATIONS WHICH THE COMMITTEE DO NOT DESIRE TO PURSUE IN VIEW OF THE GOVERNMENT'S REPLY.

Recommendation (Serial No. 2) Para No. 7 •

The Committee note that in accordance with the charter, the Defence Research and Development Organisation is expected to carry out applied research only. However, in actual practice about 5 per cent of the efforts in the organisation are devoted to basic research in order to sustain applied research, 35 per cent to applied research and 60 per cent to development. The Committee suggest that Government might consider the feasibility of amending the charter of duties so as to make the position clear in the matter of basic research.

REPLY OF GOVERNMENT

The Charter of R&D Organisation as reproduced in para 7 of the Estimates Committee's Twelfth report is only a summarised version of the detailed Charter as given in the Appendix to Government of India, Ministry of Defence Memorandum No. F. 23(28)/58/CG (Admin.) dated 19th August, 1959, which has been also reproduced in Appendix III in the Report. In the summarised version only the main spheres of activity of the Defence R&D Organisation have been emphasised.

It will be seen from para 1(a) of the charter laid down in the above quoted Memorandum that the R&D Organisation is expected to undertake "All Research" in connection with their main activity of design and development of weapons and equipment for the services. Thus basic research is not precluded from the purview of Defence R&D Organisation. As mentioned by the SA during oral evidence, however, basic research is only fostered and encouraged to the minimum extent necessary having regard to the main aims and objectives of the R&D Organisation. In view of this position if 'basic research' is specifically included as one of the aims in the charter of the R&D Organisation, it might lead to increased emphasis on such research.

[Ministry of Defence O.M. No. 15(3)/67/D (R&D), dated the 5th December, 1967].

Recommendation (Serial No. 12) Para No. 36

The Committee do not find any justification for retaining the three Functional Groups as part of the Headquarters when they are stated to be scientific groups like any laboratory or establishment. The Committee also suggest that the feasibility of separating the three Functional Groups (especially the Directorate of Psychological Research) from R&D Headquarters might be examined.

REPLY OF GOVERNMENT

The feasibility of separating the three functional groups (the Directorate of Psychological Research, the Scientific Analysis Group and the Directorate of Scientific Evaluation) from R&D Headquarters has been examined. The Scientific Analysis Group deals with top secret matters of defence interest, and has to have almost daily liaison/contact with the Scientific Adviser. The Directorates of Scientific Evaluation and Psychological Research deal with topics necessitating frequent consultations with Services HQ and R&D HQ. Moreover, conversion of these groups to lower formations would involve additional expenditure for buildings, administrative cover, transport and allied amenities. Such additional expenditure without corresponding benefits, may not be justified in the context of the present emphasis on economy. It is, therefore considered that these functional groups should retain their existing status.

[Ministry of Defence O.M. No. 15(3)/67/D (R&D), dated the 6th February, 1968].

Recommendation (Serial No. 21) Para No. 46

The Committee feel that there is much scope for coordination research activities especially from the point of view of equipment among the various aeronautical institutions located at Bangalore. The Committee suggest that the Executive Committee of the Research and Development Council should go into the matter.

REPLY OF GOVERNMENT

The Aeronautical Research and Development Panel of the Defence Research and Development Organisation has representatives from the non-Defence Aeronautical Research Institutions at Bangalore. Similarly, Defence Aeronautical Development Establishment, namely Gas Turbine Research Establishment and Aeronautical Development Establishment are represented by their Directors in the Executive Council and the Scientific Advisory Committee of

the National Aeronautical Laboratory. The Director, Indian Institute of Science is a member of the panels of the Defence Establishments and of panels of the National Aeronautical Laboratory. By this mutual representation, sufficient coordination is hoped to be established in respect of research activities at the various Aeronautical Institutions at Bangalore.

[Ministry of Defence O.M. No. 15(3)/67/D (R&D), dated the 11th January, 1968].

Recommendation (Serial No. 22) Para No. 46

The Committee feel that sufficient thought was not given when the Aeronautical Development Establishment was formed and they are unhappy about the achievements of the Establishment. They hope that the Executive Committee would take into consideration the feasibility of merging the Aeronautical Development Establishment with any other Organisation doing allied nature of work.

REPLY OF GOVERNMENT

The functions and the responsibilities of the Aeronautical Development Establishment relate principally to the laying down of standards and specifications of aeronautical stores for military users, establish test procedures and evaluate new and prototype aeronautical stores. The role of Aeronautical Development Establishment was considered in detail at the 2nd (67) meeting of the Aircraft Production Board and a revised Charter for the Aeronautical Development Establishment, as at Appendix III, was approved by them. At present there is no establishment existing which performs these functions.

[Ministry of Defence O.M. No. 15(3)/67/D (R&D), dated the 11th January, 1968].

Recommendation (Serial No. 23) Para No. 48

The Committee are distressed to note the casual manner in which the decision to locate the Institute of Work Study at Mussoorie was taken by Government. Lack of proper consideration and planning in the selection of the location of the Institute has resulted in waste of effort and money and dislocation of work. They need hardly point out the necessity for a thorough and careful examination of such matters before reaching a decision. The Committee would urge that in future very careful thought should be given to all aspects before deciding upon the location of Defence Research Institute or Laboratory. In so far as the Institute is concerned, the

Committee suggest that it should be shifted to a suitable new location which is easily accessible both to private industries and defence installations, as soon as possible.

REPLY OF GOVERNMENT

The conclusion that a decision to locate the Defence Institute of Works Study at Landour was taken in a casual manner is not supported by facts. While taking a decision to set up such an Institute, Defence Minister's R&D Committee noted that Landour might be an out of the way location. Consequently, besides Landour, Chandigarh, Ajmer and Ootacamund were also considered for this purpose. But, in view of the urgency to set up the Works Study Institute for providing training facilities to Defence personnel in this important but comparatively new subject and non-availability of a more suitable site, this Institute was set up at Landour mainly because of the readily available built up accommodation.

After experience of a few years, Landour was found to be unsuitable for the reasons explained in answer to Question No. 2 received with Lok Sabha Sectt. O.M. No. 4/5 (66)/EC-2, dated 1st December, 1966. Efforts were accordingly made to look for another site. Bangalore, Hyderabad, Ghaziabad, Meerut, Gwalior, Madras etc. were considered, but later it was decided to pend the proposal in view of the drive for economy in expenditure. The subject has now been revived and efforts are being made to find a more suitable location for this Institute.

[Ministry of Defence O.M. No. 15(3)/67/D (R&D), dated the 17th February, 1968].

COMMENTS OF THE COMMITTEE

The Committee would like to stress that in future any decision to locate a Research and Development Laboratory/Establishment should be preceded by a thorough and careful consideration about the suitability of the site so as to avoid waste of efforts and money.

Recommendations (Serial Nos. 25 & 27) Para No. 50

25. *The Committee do not feel satisfied with the reasons advanced for setting up and locating the Terminal Ballistics Research Laboratory at Chandigarh. On the other hand they are inclined to feel that Explosives Research and Development Laboratory at Kirkee could have been suitably expanded to meet the needed requirements which necessitated the setting up of the Terminal Ballistics Research Laboratory at Chandigarh.*

27. *In view of the fact that there have been several cases of initial location and subsequent shifting from the place of location of Research Laboratories which resulted in wastage of money, man-power and time, the Committee desire that enquiry should be made so as to ensure that such cases do not recur.*

REPLY OF GOVERNMENT

The Government considered the possibility of locating TBRL in the following places:

Chandigarh, Jaipur, Ajmer, Gurgaon, Agra, Bikaner, Jodhpur and Kirkee.

None of these places, except Chandigarh, offered suitable and enough land (about 8 sq. miles) with the required characteristics, *e.g.* extensive flat terrain on one side and hilly terrain on the other. Only Chandigarh satisfied this condition. Besides, the following assistance was also given to the Defence Production Department by the then Punjab Government, CSIR and the Punjab University free of cost:—

(i) *Assistance received from the Punjab Government:*

(a) Provision of the road about 3 miles long for TBRL—Rs. 3.50 lakhs approx.

(b) Provision of a bridge for TBRL—Rs. 5 lakhs.

(c) Provision of Power supply from Chandigarh to TBRL ranges.—Rs. 4 lakhs.

(d) Waiver of portion of the acquisition cost payable to the State Government by the Ministry of Defence—Rs. 5.50 lakhs.

(ii) *Assistance received from the Central Scientific Instrument Organisation:*

Transfer of land measuring 2 acres free of cost. They have also agreed to give 1.7 acres more.—Rs. 3.17 Lakhs (for the entire 3.7 acres).

(iii) *Assistance received from Punjab University:*

Accommodation for TBRL for 2½ years in University buildings without any hire charges.—Rs. 1 Lakh.

The location at Chandigarh offers the following facilities:—

(a) Reference libraries of the Punjab University and the Central Scientific Instrument Organisation.

- (b) Good precision workshops in the industrial area of Chandigarh.
- (c) Requisite power and water supply and ease of communication.

In the above circumstances, Government do not consider that a further enquiry into the matter is necessary.

[Ministry of Defence O.M. No. 15(3)/67/D(R&D) dated the 14th March, 1968].

COMMENTS OF THE COMMITTEE

The Committee did not desire any further inquiry into the present case, but they desired that in view of several cases of initial location and subsequent shifting, an inquiry as to the suitability of a particular place for location of a research laboratory should in future be made in advance so that such cases did not recur.

Recommendation [Serial No. 29 (i)] Para No. 53

The Committee note that the percentage of expenditure on administration to the total recurring expenditure in certain laboratories/establishments exceeds 20 per cent and in some cases (excluding training establishments), it has exceeded 30 per cent. The Committee would stress the need for reducing administrative expenditure which is on the high side.

REPLY OF GOVERNMENT

The statement showing percentage of administrative expenditure in R&D Establishments/Laboratories communicated to the Estimates Committee under this Ministry's O.M. No. 86114|1|RD|Tech Coord, dated the 28th July, 1967, was calculated on the basis of the expenditure on pay and allowances of the administrative staff and the total pay and allowance of the entire staff in position in 1965-66 and the vacant posts which existed mainly on the Scientific and Technical side were left out. According to this statement, administrative expenditure in 1965-66 exceeded 20 per cent in 8 establishments and also in two Training Institutes. In 1965-66 a large number of sanctioned scientific|technical posts were lying vacant. Since then, most of the posts have been filled up and the percentage of administrative expenditure to the total pay and allowances of the sanctioned establishment has been re-calculated for all the Estts|Labs for the year 1967-68 and the position is indicated in the Statement below:—

Establishments/Laboratories	Percentage of Adm. expenditure (less watch and ward) to total expenditure on authorised strength
-----------------------------	---

I	2
A.R.D.E.	10.7
B.R.D.L.	9.6
D.R.D.L.	9.6
D.M.R.L.	11.4
T.B.R.L.	11.4
I.R.D.E.	10.1
P.B.E.	11.1
R.D.E. (Engrs)	17.3
V.R.D.E.	13.4
A.D.E.	7.1
G.T.R.E.	8.3
L.R.D.E.	11.4
D.L.R.L.	8.3
S.S.P.L.	11.7
H.R.P.U.	14.8
D.S.L.	16.9
D.R.L. (M).	13.2
D.F.R.L.	10.9
D.L.J.	12.2
D.I.P.A.S.	8.1
I.N.M.A.S.	11.0
N.C.M.L.	12.7
I.N.P.L.	7.3

1	2
F.S.R.D. T. E.	16.0
•I.A.T.	25.3
•D.I.W.S.	22.1

2. It will be seen from the Statement that administrative expenditure exceeds 20 per cent, only in two Training Establishments, viz., Defence Institute of Work Study and Institute of Armament Technology. It will be seen that the percentage lies between 7 to 15 per cent in majority of the Establishments/Laboratories.

[Ministry of Defence O.M. No. 15(3)/67/D(R&D) dated the 1st April, 1968].

Recommendation (Serial No. 32) Para No. 56

The Committee note the method of secondment and permanent retention of service officers in the R&D Organisation. The Committee feel that in view of the specialised and technical nature of the work which the Service Officers are expected to perform, selection has to be made very carefully keeping in view the scientific attainment and experience of the officers concerned. The Committee also feel it necessary to associate a representative of the UPSC with the Defence Research and Development and Production Selection Board before the selection of service officers for permanent retention in the R and D Organisation is made.

REPLY OF GOVERNMENT

The practice of associating suitable officers from the three services with the Defence R & D work is in conformity with the practice adopted in other countries. As already explained the postings of service officers at R&D HQ and at the various R&D Establishments/Laboratories are finalised on the basis of their suitability for the appointment which is judged by their technical qualifications and experience in the particular field of appointment. Initially all service officers in the R&D Organisation are posted on a tenure basis and those who show a special flair, aptitude and suitability for research and development work are retained permanently. For initial appointments, the job requirements are drawn up and services HQ are requested to suggest a panel of names and selection is made out of the names so received by CC R&D and SA and finally approved by Secretary (DP) for officers of the rank of Lt. Col. Equivalent and

*The expenditure in IAT and DIWS (both training establishments) is more because of the following reasons:—

- (i) Load of Admin work connected with various training commitments, e.g. preliminary work before commencement of a course, and the work during the courses and after a course is completed, is more.
- (ii) As no project work is undertaken in training establishments the number of scientific, technical and other supporting staff is much less.

above. Officers upto and including equivalent rank of Major are selected by the Scientific Adviser.

2. In keeping with the principle of proper rotation of officers between the services and the Technical Organisations, only a certain percentage of service officers are permanently retained in the interest of continuity and effective conduct of technical work. Selection for permanent retention in R&D and Inspection Organisations is made from amongst the tenure officers. The terms and conditions of service officers in R&D and Inspection Organisations and instructions regarding their permanent retention have been promulgated *vide* Government of India, Ministry of Defence letter No. 11 (5) 58/D (R&D) dated 18th March, 1967 (Appendix IV). This letter also lays down the essential|desirable qualifications for officers selected both for tenure appointments as well as for permanent retention. According to this, permanent retention in R&D and Inspection Organisations is to be made from amongst the tenure officers who have:—

- (a) done at least 2 years as Lt. Col./Equivalent in the acting or substantive rank.
- (b) completed 2 years service in their 2nd tenure in one or both (R&D and Inspection) Organisations and.
- (c) fulfil the qualifications laid down for the purpose.

3. All proposals for permanent secondment of officers are considered by the Defence Research & Development and Production Selection Board headed by Secretary (DP) and including DGI and CC R&D as members, with a Deputy Secretary of the Ministry of Defence acting as Secretary of the Board, in consultation with the Service HQ concerned. There are thus two qualified and experienced technical officers of the two organisations on the Board. The selection for permanent secondment is made after careful consideration of all aspects including the Officer's technical background, competence for the job, his proven ability and overall performance in keeping with the needs of the organisation. The Selection Board, therefore, makes recommendations for permanent secondment of service officers who are already fully commissioned officers of the Defence Services. As pointed out by Secretary (DP) in his oral evidence, taking the case of civilian officers as a parallel, once the UPSC has taken him as Class I officer, he can be posted anywhere or seconded for any assignment and it is not necessary to associate the UPSC, after his initial selection as an officer. Similarly in the case of permanent secondment of officers to R & D and Inspection Cadre, it may be treated as secondment of an already selected and commissioned officer. It is, therefore, felt that the association of UPSC with the Selection Board

at the stage of permanent secondment will not serve any real purpose and will be inconsistent with the practice followed in regard to permanent secondment of Service Officers to other cadres e.g. Survey of India, Intelligence Corps etc.

(Ministry of Defence, O.M. No. 15(3)/67/D (R & D) dated the 28th December, 1967).

Recommendation (Serial No. 44) Para No. 72

The Committee are glad to note the steps taken by Government to obviate delays in the matter of purchase of stores & equipments etc. for the Defence Research Laboratories. They hope that an early decision will be taken by Government on the question of setting up of a Stores Purchase Committee in the Research & Development Organisation as recommended by the Estimates Committee to para 77 of their 94th report (Third Lok Sabha).

REPLY OF GOVERNMENT

A reference is invited to the reply given by the Ministry of Defence under their O.M. No. 15/21(66)/D(R&D), dated the 12th September, 1966 to Para 77 of the Estimates Committee's Ninety-fourth Report (Third Lok Sabha). The direct purchase powers of the Heads of almost all the R&D Estts/Labs. have since been raised to Rs. 20,000.00 for each item and that of the Scientific Adviser to Rs. 25,000.00. In the circumstances, necessity for setting up a Central Stores Purchase Committee with the power to make purchases up to Rs 20,000/- no longer exists.

[Ministry of Defence, O.M. No. 15(3)/67/D(R&D), dated the 4th January, 1968].

Recommendation (Serial No. 46) Para No. 73

The Committee are glad to note that there is close liaison between the Defence R&D Organisation and the Council of Scientific and Industrial Research and the resources of the latter are being fully utilised for investigation of problems of strategic importance. The Committee would suggest that Directives should be issued to all the R&D Laboratories/Establishments to the effect that before any new project is taken up by them, they should first consult the Defence Coordination Unit with a view to ascertain whether work on same or similar problem is being or has been carried out at any of the CSIR Laboratories.

REPLY OF GOVERNMENT

The R&D projects are taken up for investigation by the Establishments/Laboratories after approval by the respective R&D Panels;

Advisory Committees which comprise, among others, representatives of CSIR, Industry and some eminent scientists. In this manner all R&D projects get screened periodically and decisions are taken to farm out suitable projects to CSIR and other Universities/Laboratories. This liaison with CSIR is further likely to improve when the Governing Councils for each Establishment/Laboratory start functioning since representatives from CSIR, AEC etc. would be nominated on the Governing Council.

2. Heads of R&D Establishments/Laboratories keep themselves informed about the facilities available with the CSIR Laboratories by occasional visits and liaison. Wherever possible, projects or some specific problems concerned with projects are farmed out to these Laboratories.

3. The Defence R&D projects are required to be progressed on high priority and to the time schedule stipulated by the users. The primary objective is therefore that all tasks are progressed simultaneously in the quickest possible manner and to ensure that the build up of competence or know-how takes place at the desired pace. If consultations with the Defence Coordination Unit of CSIR has to be resorted to in every case, it will result in delays as this unit would have to refer the matter to the Laboratories concerned.

4. In view of what has been stated in paras 1, 2 and 3 above, we feel that it may not be necessary to bind R&D Establishments/Laboratories to have prior consultation with the Defence Coordination Unit of the CSIR before undertaking R&D projects connected with their assigned field of responsibility. Where, however, there is any doubt this consultation will be undertaken.

[Ministry of Defence, O.M. No. 15(3)/67/D(R&D), dated the 16th February, 1968].

COMMENTS OF THE COMMITTEE

Before taking up projects of strategic importance, the R&D Laboratories/Establishments should invariably consult the Defence Coordination Unit of the CSIR with a view to see that there is no overlapping or duplication of efforts in such matters.

Recommendation (Serial No. 52) Para No. 78

The Committee consider that holding of only 19 symposia/seminars during a period of five years indicates that the medium is not being utilised adequately. The Committee suggest that the symposia on practical problems being dealt with by the Defence R&D Organi-

sation should be organised more frequently and with greater participation of scientists and technologists from outside the Organisation so as to let in the fresh air. The Committee also suggest that summer schools should be held for giving training to the apprentices and trainees at the various training institutes under the organisation, and for providing opportunities to bring them in contact with senior scientists.

REPLY OF GOVERNMENT

It has been our policy to encourage all R&D Establishments/Laboratories to hold symposia/seminars on topics of their particular interest. The 19 Symposia/Seminars over a period of 5 years on which information was furnished to the Estimates Committee were those of a major and large-scale nature where participation from both R&D and outside organisations/agencies was on a wide scale and where separate funds had to be sanctioned to meet expenditure of a contingent nature. In addition, scientists from R&D Organisation are encouraged to participate in symposia/seminars/conferences organised by National Laboratories and other scientific and technical institutions in the country. As many as 200 scientists/technologists of R&D Organisation took part in such symposia/seminars, etc., organised by outside agencies from the period 1 Jan. 1966 to 15 Oct. 1967. The delegation fee payable by our scientists for this participation is also paid by the Government.

Most of the R&D Establishments/Laboratories are engaged on high priority target dated research and development activities for the services. Holding of a greater number of large scale symposia/seminars puts considerable strain on the limited resources available with the R&D Establishments/Laboratories and consumes considerable scientific/technical man hours in organising such an activity. It may, therefore, result in dislocation of work on projects and might be detrimental to the progress of the assigned R&D tasks, particularly in the case of the equipment-oriented establishments/laboratories where target dates assigned by the users have to be adhered to.

[Ministry of Defence, O.M. No. 15(3)/67/D(R&D), dated the 5th December, 1967].

Recommendation (Serial No. 61) Para No. 87

The Committee are not happy that a separate Fire Research Division is being set up under the CSIR when there is already a well established Research Organisation under the Ministry of Defence—Defence Research and Development Organisation. The Committee hope that the Fire Research Division of the Central Building Research

Institute Roorkee, will not take up such of the activities as are being performed by the Fire Service Research Development and Training Establishment under the D.R.&D.O. The Committee would like to stress the need for maintaining a close liaison between the two organisations. They also suggest that the steps of augmenting the training facilities at the Fire Service Research Development Training Establishment may be explored so that personnel from Civil Research Institute as also the Ministry of Home Affairs academic institutions etc. also could be trained there in fire fighting operations.

REPLY OF GOVERNMENT

Steps have already been taken to maintain close liaison between the Fire Services Research Development Training Establishment of the Defence Research and Development Organisation and the Fire Research Division of the CSIR at Roorkee. Every endeavour will be made to ensure that there will be no overlapping of activities in the field of fire research between the two Organisations.

The Fire Service Research Development Training Estt. is at present conducting four types of courses. Of these, two are exclusively of defence interest and are utilised to meet the training requirements of the Services and Defence Organisation. In the 3rd course—the General Course in Fire Fighting—five seats are made available to personnel from civil organisations such as ONGC, Survey of India, Fertiliser Corporation of India, Bhakra Nangal Project, Cantonment Boards, Municipalities etc. In the 4th Course—Breathing Apparatus Course—the intake capacity is proposed to be increased so that at least five vacancies could be offered to civilian organisations.

[Ministry of Defence, O.M. No. 15(3)/67/D(R&D), dated the 7th March, 1968].

Recommendation (Serial No. 63) Para No. 89

The Committee would like to reiterate their earlier recommendation made in para 36 of their 95th Report (Third Lok Sabha) stressing the need for periodical evaluation of the research work conducted by the Research and Development Laboratories/Establishments once every 5 years by a Committee consisting of eminent scientists drawn both from the Defence R&D Organisation as well as from outside. In view of the fact changing developments in the field of science, the Committee would urge that the first such quinquennial evaluation should be done immediately in addition to the usual evaluation made by the organisation. In addition to the quinquennial review, the Committee would also stress the need for evaluating research at the institutional level in terms of achievements in relation to the objectives set forth and the resources utilised. Such an evaluation is neces-

sary with a view to see whether the investments in terms of resources are commensurate with the possible gains from the results of research.

REPLY OF GOVERNMENT

Noted. As explained in reply to para 36 of the 95th Report (3rd Lok Sabha), the R&D Organisation is still being built up and consolidated. It is, therefore, considered that the time is not yet ripe for carrying out an evaluation of the type envisaged by the Estimates Committee. Such an evaluation would perhaps yield better dividends after another 2 or 3 years when the R&D Organisation would have had time to reach an adequate level of development.

Association of outside scientists with the Committee for evaluation of R&D effort of the Establishments/Laboratories every five years as recommended by the Estimates Committee is agreed to. It will have to be ensured, however, that such outside scientists to be associated with the proposed committee, will have adequate knowledge of defence R&D and may be drawn from the Governing Councils constituted for the R&D Establishments under the Model constitution approved by the Cabinet.

As regards evaluation of R & D effort at the institutional levels, various approaches to the problem were discussed at the 10th Annual R & D Conference. As a result of these discussions, all R & D Establishments|Laboratories have been asked to make out at the beginning of each year, a performance budget within the targets set forth in their approved five year plans, taking into account slip-pages that might have taken place in the previous year. With the formation of Governing Councils for the Establishments|Laboratories, the machinery for evaluation of R & D effort at the Institutional levels in terms of achievements in relation to objectives will be still further strengthened. It is hoped that the Governing Councils will not only evaluate but also ensure that the work actually proceeds on the right lines and at the desired pace.

[Ministry of Defence, O.M. No. 15(3)/67/D(R&D), dated the 3rd February, 1968].

CHAPTER IV

RECOMMENDATION IN RESPECT OF WHICH REPLY OF GOVERNMENT HAS NOT BEEN ACCEPTED BY THE COMMITTEE

Recommendation (Serial No. 6) Para No. 13

The Committee consider that for the efficient functioning of the Defence Research and Development Council and Executive Committee, it is essential that they should be provided with suitable secretarial assistance from among the existing staff of the Organisation. They hope that the question of re-organisation the present secretariat set up for the Defence Research and Development Council and the Executive Committee will be settled without any further delay.

REPLY OF GOVERNMENT

At the time when evidence had been recorded by the Estimates Committee, the Committee had been informed that the question as to who should provide secretarial assistance to the Research and Development Council, i.e., whether it should be provided by the Director of Administration (R&D) or by the Ministry of Defence (Department of Defence Production) or the Military Wing of the Cabinet Secretariat, was under consideration. It has since been decided that the existing arrangements whereby this assistance is provided by the Department of Defence Production to both the R&D Council and the Executive Committee should continue.

However, as stated in the reply to the recommendations (Sl. No. 4 and 5 in Appendix XXXI) contained in para 12, the constitution of the Executive Committee is being reviewed.

[Ministry of Defence, O.M. No. 15 (3) /67/D (R&D), dated the 22nd March, 1968].

COMMENTS OF THE COMMITTEE

While the Committee note the position explained by the Government in para 1 of their reply above, they would like to reiterate that the question of reorganising the present Secretariat set up for the Defence Research and Development Council and the Executive Committee should be settled without further delay.

CHAPTER V

RECOMMENDATIONS IN RESPECT OF WHICH FINAL REPLIES OF GOVERNMENT HAVE NOT BEEN RECEIVED

Recommendations (Serial Nos. 4 & 5) Para No. 12

4. *The Committee note that out of 9 members of the Executive Committee only 3, viz., the Scientific Adviser, Chief Controller.—Research and Development and Director General of Inspection, are the members of the Council. Normally the Executive Committee should be composed of selected members from the larger body i.e. Council. Since there are as many as six out-siders in the Committee the present nomenclature 'Executive Committee' would appear to be a misnomer. The Committee accordingly suggests that the nomenclature of the 'Executive Committee' should be changed so as to remove any confusion in this regard.*

5. *The Committee further note that the membership of the Executive Committee is confined to officers from Army Headquarters and the Ministry of Defence. The Committee suggest that the membership of the Committee should be mainly scientific and should include at least two independent scientists whose presence will be useful to the deliberations of the Executive Committee.*

REPLY OF GOVERNMENT

Government have noted the recommendations of the Committee. The constitution of the Executive Committee is being gone into afresh and it will take some time to reach a decision.

[Ministry of Defence, O.M. No. 15(3)/67/D (R&D), dated the 7th March, 1968].

COMMENTS OF THE COMMITTEE

The Committee may be informed about Government's final decision regarding the constitution of Executive Committee.

Recommendations (Serial Nos. 13 & 28) Para Nos. 39 and 52

13. *The Committee feel that there is scope for reducing the number and strength of the Technical Directorates which are mainly concerned with liaison and coordination. They are inclined to think that the number of scientists at the Headquarters should not be large.*

In so far as the Defence R&D Organisation is concerned, the real work is done at the Establishments/Laboratories and the scientists should be usefully employed there. The Committee would urge that at the time of implementing the decision to introduce the Model Constitution in the Defence Research Establishments/Laboratories in terms of the Cabinet Secretariat letter of 16th April, 1964 Government will take the opportunity of reorganising the Headquarters set-up with a view to reducing the Directorates to the barest minimum compatible with efficiency.

28. The Committee note that 'liaison and coordination' is the main function of the R&D Headquarters. That being the case, they feel that the Headquarters Directorates are overstaffed more particularly in regard to officers. In their opinion a small compact Headquarters would better serve the interests of research work assigned to the R&D Organisation. They are, however, glad to note that the staff strength at the R&D Headquarters has been reviewed by the Staff Inspection Unit, and, as a result of the recommendations made by the Unit, some reduction has been made both in the Gazetted (Administrative) and in the non-gazetted Establishment.

The Committee have been informed that the Government have agreed to adopt the model constitution as envisaged in the Government of India, Cabinet Secretariat letter No. 84/13/CF-64, dated 16th April, 1964 for major establishments and laboratories in the R&D Organisation. They hope that after the introduction of model constitution in the Establishments and Laboratories and the formation of Governing Councils for them, the workload at the Headquarters will be considerably reduced necessitating a further review of the staff position (both technical and administrative) at the Headquarters.

REPLY OF GOVERNMENT

In Chapter III of their Report, the Estimates Committee have taken note of the fact that the three functional groups and four Advisory groups located in Delhi do not perform Headquarters duties. The sanctioned strength of the functional groups, viz., Directorate of Psychological Research, Dte. of Scientific Evaluation and Scientific Analysis Group, is 239 and that of the Advisory Groups viz. Scientific Adviser to Chief of the Army Staff, SA to Chief of the Air Staff, Director, Scientific Research (Navy) and Fire Adviser is 47. If the posts in functional and Advisory groups are excluded,

the strength of the six Technical Directorates, of Admin Dte and Technical Coord will be substantially lower.

Considerable reduction has already been made in the Directorate of Administration on the basis of the recommendation of the SIU. Defence Institute of Work Study has been asked to make an assessment of the work-load and the man-power requirements of the Technical Directorates. On receipt of its recommendations the question whether the strength of Technical/Scientific Staff should be further reduced will be examined further.

[Ministry of Defence O.M. No. 15(3)/67/D(R&D), dated the 7th March, 1968].

COMMENTS OF THE COMMITTEE

The Committee may be informed about the results of assessment being made by DIWS regarding the work-load and manpower requirements of Technical Directorates and about Government's final decision in the matter.

Recommendation (Serial No. 29 (ii) Para No. 53.

The Committee suggest that the Ministry may lay down definite ceilings in regard to the percentage of administrative staff viz-a-viz the total staff as also the percentage of expenditure on administrative personnel in each laboratory/establishment. The Committee also suggest that before laying down the ceilings the Ministry may ascertain the position obtaining in CSIR Laboratories and similar organisations in the UK and other advanced countries. In this connection, the Committee would also like to invite the attention of the Ministry to the observations/recommendations made by them in para 19 of their 95th Report (March 1966) (Third Lok Sabha 1965-66) on the Ministry of Defence: Defence Research and Development Organisation—Electronics and Radar Development Establishment, Bangalore.

REPLY OF GOVERNMENT

[Kindly see reply of Government to recommendation at Serial No. 29(i) in Chapter III of this Report.]

COMMENTS OF THE COMMITTEE

The Committee would like to know the action taken in regard to the fixation of definite ceilings in respect of percentage of Administrative staff to the total staff in each laboratory/establishment.

Recommendation (Serial No. 36) Para No. 61

While the Committee realise the difficulties of the R&D Organisation, they nevertheless feel that expansion programmes of the Organisation should be formulated in such a manner that persons in none of the groups remain dissatisfied. The Committee also suggest that the feasibility of introducing a system of time scale promotion and promotion by merit up to the grade of Senior Scientific Officer may be considered.

REPLY OF GOVERNMENT

The system of promotion by merit up to the grade of Directors Grade-II is already in vogue in D.S.S. As the load of R&D work varies from discipline to discipline, it is not easy to have a uniform system of promotion prospects for the scientists belonging to different disciplines. A proposal to introduce a system of time scale promotion combined with merit up to the grade of P.Sc. O. i.e. a step above the SSO—I mentioned by the Estimates Committee is under consideration of the R&D Organisation.

[Ministry of Defence O.M. No. 15(3)/67/D (R&D), dated the 22nd December, 1967].

COMMENTS OF THE COMMITTEE

The Committee may be informed of the final decision taken by Government on the proposal to introduce a system of time-scale promotion combined with merit upto the grade of P.Sc. O.

Recommendation (Serial No. 62) Para No. 88

The Committee are unhappy that the Apprenticeship Training Scheme has not been able to attract suitable candidates in adequate numbers and that the intake capacity has remained under-utilised. The Committee feel that poor response is mainly due to unattractive stipends paid to the Apprentices. The Committee suggest that the question of raising the quantum of stipends for the Apprentices be considered by Government so that brilliant and talented research scholars are encouraged to look for their careers in the Defence Research and Development Organisation.

REPLY OF GOVERNMENT

The suggestion regarding raising the quantum of stipends of the Apprentices is under the consideration of the Government.

[Ministry of Defence O.M. No. 15(3)/67/D (R&D), dated the 11th January, 1968].

COMMENTS OF THE COMMITTEE

The Committee may be informed about Government's final decision in the matter.

NEW DELHI;

Dated the vrth February, 1960.

Magha, 30, 1890 (Saka).

P. VENKATASUBBAIAH,

Chairman,

Estimates Committee.

APPENDICES

APPENDIX I

(Vide reply to recommendations S. No. 16 in Chapter II)

No. 23 (51) /64/417/S/D (R&D)

GOVERNMENT OF INDIA

Ministry of Defence

New Delhi, the 21st July, 1967/30th Asadha, 1889

To

The Scientific Adviser to the Minister of Defence and Director General, Defence Research and Development, New Delhi.

SUBJECT—Formation of Governing Councils for Establishments and Laboratories connected with Scientific Research in the Defence Research and Development Organisation.

Sir,

I am directed to convey the sanction of the President to the formation of Governing Councils as under for Defence Research and Development Establishments/Laboratories except Institute of Work Study, Landour and Proof and Experimental Establishment, Bangalore:—

- (i) A group of establishments/laboratories engaged in similar work will have a common Governing Council and where such grouping is not possible an individual establishment/laboratory will have a separate Governing Council.
- (ii) The strength of the Governing Council in each case will be fixed on the basis of the disciplines involved, the extent of the R&D responsibility and the security aspects. Each Governing Council will have, besides the Head of the concerned Laboratory or the Establishment, a representative each from:—
 - (a) R&D Headquarters (DG, Defence Research and Development/Chief Controller R&D/Chief Scientist/Technical Director).

- (b) Ministry of Defence (Deptt. of Defence Production).
 - (c) Ministry of Finance (Defence).
 - (d) Service Headquarters.
- (iii) In addition, selection will be made from amongst the following depending on the needs of each case:—
- (1) Director of the National Laboratory of the CSIR dealing with a similar discipline;
 - (2) Atomic Energy Commission;
 - (3) Indian Institutes of Technology;
 - (4) Defence production Agencies (DGI/Ordnance Factories/ HAL/BEL etc.);
 - (5) Director General, Armed Forces Medical Services;
 - (6) Outstanding Scientists; and
 - (7) Director General Technical Development.
- (iv) A member appointed under para (iii) above will cease to be a member of the Governing Council if he fails to attend three consecutive meetings.
- (v) The Heads of the concerned establishments/laboratories will be ex-officio members of the relevant Governing Councils.
- (vi) Each Governing Council will have a life of 3 years from the date of constitution.
- (vii) The Governing Council will exercise powers as shown in Annexure to this letter.

2. I am further directed to add that expenditure on TA/DA will be met by the respective Department of the official member attending a meeting of the Governing Council and, in respect of the non-official member, it will be met out of the Defence Services Estimates in accordance with the orders contained in Ministry of Defence letter No. F.25(176)/57/11534/D(Estt. I), dated 28th December, 1960, as amended from time to time. You are also declared Controlling Officer for the purpose of TA/DA for non-official members and delegated powers to permit non-official members to travel by air subject to the condition laid down in para 1(a)(iv) of Ministry of Finance (Department of Expenditure) O.M. No. F.6(26)-EW/57, dated 5th September, 1960 as amended by OM dated 22nd October, 1966 as made applicable on the Defence side by the Ministry of Defence letter No. F25(176)-57/11534/D(Estt I), dated 28th December, 1960.

3. I am to request that the proposals in regard to the composition of each Governing Council with reference to the grouping of establishments mentioned in para 1(i) may be framed at an early date and submitted for approval of Government.

4. This letter issues with the concurrence of Ministry of Finance (Defence) *vide* their u.o. No. 287/S./Proj. III dated 20th July, 1967.

•

Yours faithfully,

Sd./ N. S. Raghavan.

ANNEXURE TO APPENDIX I

A. FINANCIAL POWERS OF THE GOVERNING COUNCIL

1. Sanction research and development projects at a cost not exceeding Rs. 2.0 lakhs per project (including placement of development contracts on Government, Semi-Government, Public Sector Undertakings, Trade etc. agencies).

2. Sanction expenditure on any item of equipment, stores, services or capital work required in execution of a project or projects approved by the competent authority and for which budget provision exists. (Normal rules regarding procurement of materials, and award of contracts regarding works or services will be followed).

3. Exercise full powers in respect of contingent expenditure subject to the condition that the expenditure is restricted to the amount specifically provided for in the budget for such item(s). (Scales whenever prescribed will not be exceeded and rules regarding the manner and procurement will be followed.)

4. Sanction reappropriation of funds from one detailed head to another under Main Head 5C provided that no reappropriation is made to meet any item of expenditure which has not been sanctioned by a competent authority and the total sub-allotment made by the HQrs. for an Establishment/Laboratory is not exceeded.

5. Purchase of stores and equipment required for normal activities and not related to any specific project out of a lumpsum provision not exceeding Rs. 1 lakh in the case of any Estt. or Lab. subject to the condition that purchase will be according to approved scales when they exist or on as required basis, and that the expenditure on a single item shall not exceed Rs. 10,000 and provision in the budget exists.

6. Sanction creation of posts required in connection with approved projects, provided that the duration of a post created shall not exceed 2 years and the post shall be in the category of non-gazetted technical or non-technical; also to sanction suspension and abolition of such posts.

7. Approve appointments to sanction Class III posts including selection posts.

3. Sanction write off of irrecoverable losses of stores and public money upto the following limits:—

<i>Due to theft, fraud or neglect</i>		<i>Not due to theft, fraud or neglect</i>
Stores	Rs. 5,000.00	Rs. 15,000.00
Public Money	Rs. 3,000.00	Rs. 5,000.00

B. REDELEGATION

The Governing Council may delegate such powers to the Heads of Establishments/Laboratories as they consider proper and under such conditions as they may deem necessary.

APPENDIX II

(vide reply to recommendation S. No. 30 in Chapter II)

Statement showing additional powers vested in the Director of Laboratory/Establishment

<i>Serial No.</i>	<i>Nature of Power</i>	<i>Extent up to which vested previously</i>	<i>Extent up to which now enjoyed</i>
1	Purchase of stores on limited tender system.	Cost not to exceed Rs. 5,000.00 per item	Cost not to exceed Rs. 10,000.00 per item.
2	Purchase of stationery for office use.	Nil.	Up to Rs. 50.00 per transaction and Rs. 150.00 per annum.
3	Placement of indents on Central Procuring Agencies.	Nil.	Full.
4	Powers to enter into Development Contract/Order.	Upto Rs. 20,000.00	Full powers once the project has been sanctioned by the Competent Financial Authority.

APPENDIX III

(Vide reply to recommendation S. No. 22 in Chapter III)

No. AERO/0152/67/7361/D(R&D)

Government of India,

Ministry of Defence,

New Delhi, the 27th July, 1967.

To

The Scientific Adviser to the Minister of Defence
and Director General, Defence Research & Development,
New Delhi.

SUBJECT: Charter of duties of Aeronautical Development
Establishment.

Sir,

I am directed to say the following charter of duties has been determined for the Aeronautical Development Establishment:—

- (a) To assist in evolving aeronautical standards and specifications and in their application and implementation.
- (b) To evolve test procedures for evaluating new and prototype aircraft, equipment and aircraft materials and to conduct such tests and trials as may be required.
- (c) To undertake research and development for improvement of safety, performance and reliability of aircraft and their equipment.
- (d) To design and develop special items of aeronautical equipment.
- (e) To conduct flight research and development.

Yours faithfully,

Sd/- J. KATHPALIA,

Under Secretary to the Govt. of India.

APPENDIX IV

(Vide reply to recommendation S. No. 32 in Chapter III)

No. 11(5)/58/D(R&D)

GOVERNMENT OF INDIA

Ministry of Defence

New Delhi, the 18th March, 1967, 27th Phalguna, 1888 (SE).

OFFICE MEMORANDUM

SUBJECT:—Procedure for intake of Service Officers in the Research & Development and Inspection Organisations of the Ministry of Defence and Terms and Conditions of Service of those permanently retained.

The undersigned is directed to say that the question of laying down the procedure for intake of Service Officers and prescribing the terms and conditions of those permanently seconded to the Research & Development and Inspection Organisations has been under consideration of the Government for some time past. The President is pleased to decide that the procedure and terms and conditions of service of the officers in question, will be as under—

1. **Controlling Authority.**—The Ministry of Defence (Department of Defence Production) will be the Controlling Authority. They will be advised on matters concerning the promotion and permanent retention of service officers in the Research & Development and Inspection Organisations by a Selection Board as constituted under Government of India letter No. 11(5)/58/D(R&D), dated 18th March, 1967.

2. **Authorised Strength.**—This will be as decided upon by the Government from time to time. The authorised strength as on 31st December, 1965, is as shown in Annexure "A".

3. **Intake of Service Officers on Tenure.**—In take of Service Officers to fill the technical appointment in the Research & Development and Inspection Organisations will ordinarily be in all ranks upto and including Lt. Col./equivalent. Officers must have passed the examinations for promotion to Maj./equivalent.

Qualifications necessary for the intake and also those for permanent retention of officers in the various Technical Divisions of the two Organisations are shown in Annexure "B".

The period of tenure will be 3 years. This may be extended up to 4 years with the concurrence of the Service Headquarters concerned

4. Permanent Retention.—Selection for permanent secondment will be made from amongst the tenure officers who have—

- (a) done at least two years as Lt. Col. or equivalent in acting or substantive rank in their second tenure;
- (b) the qualifications laid down for the various Technical Division in Col. 3(b) of Annexure "B".

MS/COP/AOA as the case may be will be consulted regarding the availability of officers, recommended for permanent secondment.

Final orders accepting an officer for permanent retention will be issued only after the officer's willingness has been obtained in writing in the form of a certificate as at Annexure "C".

5. (a) Age of Compulsory Retirement.—Rules regarding age of compulsory retirement, minimum age of retirement, period and number of tenures allowed in rank above Lt. Col./equivalent, will be the same as prevalent in the service of the officer concerned.

(b) Promotions—

(i) Acting ranks—

- (a) Promotion from Captain to A/Major will be approved by the Director General of Inspection for officers of Inspection Organisation and by the Director General, Research & Development for officers of the Research & Development Organisation.
- (b) Selection for promotion to acting ranks of Lt. Col./equivalent and above from amongst permanently retained officers, will be made by the Selection Board in accordance with vacancies and according to rules of eligibility as issued by Government for Service Officers and such other rules made for permanently retained officers from time to time. Tenure officers where eligible, will also be considered. Their promotion, however, will be considered only after consultation with the MS/COP/AOA as the case may be.

(ii) *Substantive ranks—*

Rules regarding eligibility for promotion to substantive rank of Lt. Col./equivalent and above by selection will be as under:—

RANKS		MINIMUM PERIOD OF TOTAL SERVICE
From	To	
Maj./equivalent	Lt. Col./equivalent	16 years
Lt. Col./equivalent	Col./equivalent	20 years
Col./equivalent	Brig./equivalent	23 years
Brig./equivalent	Maj./equivalent	25 years.

(c) **Pay and Allowances and other benefits.**—Unless otherwise specified, these officers will get pay and allowances of their respective Services.

(d) **Medical Category.**—Rules regarding Medical Category will be the same as prevalent in the respective Service.

(e) **Recall to Service.**—Officers, though permanently seconded, will continue to be shown on the respective Service lists. Their names will be marked with an asterisk to indicate permanent secondment. In exceptional circumstances, a permanently retained officer may be recalled to parent Service with the approval of the Government of India.

6. **Postings.**—(a) Officers may be posted to any appointment under the Department of Defence Production on the basis of their qualifications and experience as required in public interest.

(b) In consultation with Service Headquarters, officers may also be attached to the parent service for specified periods to enable them to be up-to-date with users' requirements.

7. This Office Memorandum issues with the concurrence of the Ministry of Finance (Defence) vide their u.o. No. 21/S/Proj.III dated 9th March, 1967 as will come into effect from the date of issue.

Deputy Secretary to the Government of India.

To

The Chief of the Army Staff.

The Chief of the Naval Staff

The Chief of the Air Staff.

ANNEXURE 'A' TO APPENDIX IV

Sanctioned authorised strength of the R&D and Inspection Organization as on 31-12-1966.

<i>Ranks</i>	<i>Inspection Organisa- tion</i>	<i>R & D Organisa- tion</i>	<i>Total</i>
Major General or equivalent	1	1	2
Brigadiers or equivalent	2	6	8
Colonels or equivalent	15	16	31
Lieut-Colonels or equivalent	48	53	101
Majors or equivalent	104	135	239
Captains or equivalent	44	12	56
TOTAL	214	223	437

ANNEXURE 'B' TO APPENDIX IV

Qualifications for a Tenure Appointment and Permanent retention with the Research & Development and Inspection Organisations.

Technical Division	Service	Qualifications/Experience	
		Tenure Appointment	Permanent Retention
1	2	3(a)	3(b)
Armament	Army Officer	Officers possessing at least Inter-Science/or equivalent qualifications. In addition, technical qualifications such as Gunnery Staff Course, Ammunition Technical Officer Course and Advance Armaments Engineering Course etc. are desirable. Alternatively, officers who have done the TSO's Course with Armaments as a special subject.	Must have qualified at the TSO's Course or equivalent Weapons Specialisation.
Do.	Naval Officer	Officers possessing at least Inter-Science/or equivalent qualifications. In addition, technical qualification such as Long Gunnery Course or Weapons Course at Electrical School etc. are desirable. Alternatively, Officers who have done the TSO Course with Armaments as a special subject.	Degree in Engineering or Electrical Specialisation Course or TSO's Course.
Do.	Air Force Officer	<i>Tech/Armt Officers</i> Officers possessing degree in Engineering with Armt. experience or a minimum of 15 years experience as Tech/Armt. Officer. In addition, desirable undergone Advance Air Armt. Staff Course at IAT or Tech Course abroad or Aeronautical Inspection Service Course.	Same as for "Tenure appointment".
		<i>GD Officers</i> Officers possessing at least ISC or equivalent qualifications. In addition, desirable undergone Adv. Armt. Staff Course at IAT or Tech Course at Air Force Technical College.	Same, but must have done Adv Army Staff Course at IAT or Tech Course at Air Force Technical College.

1	2	3	3(b)
Vehicles	Army Officer	Officers who are Graduated of the Institution of Engineers (India) or equivalent. Officers of Armoured Corps Qualified at ACC Course.	Officers who have successfully completed either — (a) an advanced Mechanical/Aeronautical Engineering ; or (b) TSO (Course) with Vehicles as a special subject.
	Air Force officer	<i>Essential</i> A degree in Engineering or a graduate of Institution of Engineers (India) with Mechanical Engineering subject or equivalent. GD officers who have done Tech Course at Air Force Technical College. <i>Desirable</i> (a) Experience as Mechanical Transport Officer of an Air Force Wing, or (b) Experience of repairs/overhaul of Vehicles at Mech Tpt. Repair Depot of the Air Force ; or (c) Aeronautical Inspection Service Course.	Same as for "Tenure appointment".
	Army Officer	(a) A degree or diploma or equivalent in engineering, textile technology, forestry, or any branch of chemical technology ; or (b) Science qualifications such as BSc or MSc in Chemistry/ Physics / mathematics/ metallurgy ; or (c) have undergone TSOs (Stores) Course.	Same as for "Tenure Appointment".
Do.	Naval Officer	Do.	Do.
	Air Force Officer	<i>Essential</i> (a) A degree in Engineering or equivalent ; or (b) Science qualification such as BSc or MSc.	Same as for "Tenure Appointment".

1	2	3(a)	3(b)
		(c) GD Officers who have done a Tech Course at Air Force Technical College.	
		<i>Desirable :</i>	
		(a) Aeronautical Inspection Service Course ; or	
		(b) Experience of a Base Repair Depot of the Air Force.	
	Army Officer	The officers should have either a recognised engineering qualification in the field of electronics and/or done advanced telecommunication course or a long advanced course on radar technology. Alternatively, officers who have done the TSO's Course with Electronics as a special subject ; or MSc (Physics) with Electronics as special subject.	Same as for "Tenure Appointment".
ELECTRONICS	Naval Officer	The officers should have either a recognised engineering qualification in the field of electronics and/or done advanced telecommunication course or a long advanced course on radar technology. Alternatively officers who have done the TS's Course with Electronics as a special subject ; or MSc (Physics) with Electronics as special subject.	Same as for "Tenure Appointment".
Do.	Air Force Officer	<p data-bbox="427 1148 532 1174"><i>Essential :</i></p> <p data-bbox="448 1174 729 1254">Should have recognised Engineering qualifications in the field of Electronics ; or</p> <p data-bbox="427 1277 739 1324">MSc (Physics) with Electronics as special subject ; or</p> <p data-bbox="427 1342 739 1448">Should have qualified as a Signals Officer after completing a full course at Air Force Technical College : or</p> <p data-bbox="427 1471 739 1577">Have completed an advanced Electronics Course at Institute of Armament Technology or at Air Force Technical College : or</p>	Same as for "Tenure Appointment".

1

2

3(a)

3(b)

GD Officers who have done a Guided Weapons Course at 7 Ground Training School or BSc (Physics).

Desirable :

An academic course of long duration abroad and/or advanced academic knowledge in design and production of electrical and instruments equipment.

AERONAUTICS

Air Force Officer *Essential :*

- (a) A degree in Mechanical Engineering/ Aeronautical Engineering or equivalent. Same as for "Tenure Appointment."
- (b) Field or Depot Maintenance experience in Air Force.
- (c) GD Officers who have done a Test Pilots Course or have Associated Fellow of the Royal Aeronautical Society diploma or Tech. Course at Air Force Technical College.

Desirable :

- (a) Post graduate qualification in aeronautical engineering ; or Same as for "Tenure Appointment."
- (b) Post graduate Course/ Training undertaken by the Air Force, such as Repair and Development Course; or
- (c) Experience in Design/ Research/Production / Flight Testing/Inspection of Aircraft and/or aero-engines.

AMC OFFICERS

- (a) *Educational qualifications* —A medical qualification included in the First Schedule or the Second Schedule or Part II of the Third Schedule excepting the Licentiate qualifications included in the Schedule to the Medical Council of India Act, 1956 Same as for "Tenure Appointment."

1	2	3 (a)	3(b)
		and be registered on any State Medical Register.	
		NOTE :—Holders of Licentiate qualifications included in first and second Schedules should have passed FSc or Intermediate (Science) examination before taking the medical Licentiate qualification.	
		(b) Must be graded as a specialist.	
		(c) <i>Desirable</i> —Must have aptitude for research.	

Annexure "C" to Appendix IV

CERTIFICATE

I agree to my permanent retention in the Research & Development and Inspection Organisations for the rest of my Service. I also agree to be governed by the terms and conditions of service of officers retained permanently in the Research & Development and Inspection Organisations.

I fully understand that in making this choice, I forego my claim to seniority and promotion in my Corps/Regt.

Signature of the officer
Rank.

Corps/Regt.

APPENDIX V

Analysis of the action taken by Government on the recommendations contained in the Twelfth Report of the Estimates Committee (Fourth Lok Sabha)

1.	Total number of Recommendations .	65
2.	Recommendations that have been accepted by Government (<i>vide</i> recommendations at Sl. Nos. 1, 3, 7 to 11, 14 to 20, 24, 26, 30, 31, 33 to 35, 37 to 43, 45, 47 to 51, 53 to 60 and 64)	
	Number	43
	Percentage to total	66.2%
3.	Recommendations which the Committee do not desire to pursue in view of Government's reply (<i>vide</i> recommendations at Sl. Nos. 2, 12, 21 to 23, 25, 27, 29(i), 32, 44, 46, 52, 61 and 63)	
	Number	14
	Percentage to total	21.5%
4.	Recommendation in respect of which reply of Government have not been accepted by the Committee (<i>vide</i> recommendation at Sl. No. 6)	
	Number	1
	Percentage to total	1.5%
5.	Recommendations in respect of which final replies of Government have not been received (<i>vide</i> recommendations at Sl. Nos. 4, 5, 13, 28, 29(ii), 36 and 62)	
	Number	7
	Percentage to total	10.8%

© 1969 BY THE LOK SABHA SECRETARIAT.

PUBLISHED UNDER RULE 382 OF THE RULES OF PROCEDURE AND CONDUCT OF
BUSINESS IN LOK SABHA (FIFTH EDITION) AND PRINTED BY THE GENERAL
MANAGER, GOVERNMENT OF INDIA PRESS, MINTO ROAD, NEW DELHI.
