AD-A137 843 INDUSTRY PARTICIPATION IN DEFENCE RESEARCH AND DEVELOPMENT(U) DEPARTMENT OF DEFENCE MELBOURNE (AUSTRALIA) DIRECTOR OF STUDIES INDUSTRIAL MOBILIZATION COURSE R D TOOHER ET AL. DEC 83 1/1

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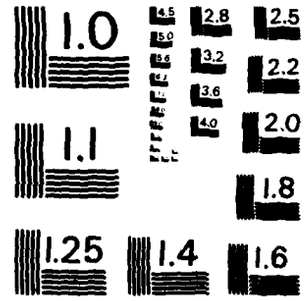


The Crisis We Face

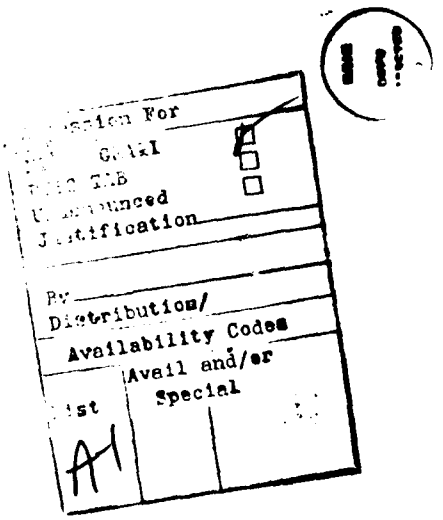
Picture a man in charge of weapons for a medieval king. If he is scientific minded, he will try to improve his bows and arrows by working on different parts of the product. The searcher may be assigned to study the properties of feathers. He will try to improve the breed of birds, study feather selection and storage, investigate whether they should be trimmed 1/2 or 3/4-inch wide and so on. This man will conduct what many call 'scientific research' for years. He may achieve many improvements, giving arrows better stability and accuracy; but what is the chance that such a man will ever invent a gun? If he should hear about one, the chances are he will do his best to point out how unstable and dangerous it is to carry a powder horn, how inaccurate the new guns are, and how many families depend for their livelihood on the chicken feather business.

From 'The Crisis We Face' by George Steel and Paul Kucker. 1960 McGraw-Hill.

Barzun's Law

Abdicating power generates the taste for organized inaction and the pursuit of pseudowork ... to redundant talk, broody sittings of committees, and proliferating plans and reports fore and aft of nonexisting accomplishments.

From 'The House of Intellect' by Jacques Barzun. 1959 Harper and Row.



SYNDICATE LIST

This report was prepared by members of Syndicate No 1 who participated in the 1983 Queensland Industrial Mobilization Course. The members of the syndicate were:

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(This report represents a consensus of views of Syndicate members. Particular recommendations, arguments or statements should not be taken as necessarily representing the views of each and every member of the Syndicate.)

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Summary

The 1983 Queensland Industrial Mobilization Course Syndicate 1 has collated recommendations from various sources on Defence Industrial Research and Development. The Syndicates limited deliberations indicate that it may be opportune to forge closer links between Defence and external Research and Development authorities such as the Australian Science and Technology Council and the Commonwealth Science and Industry Research Organization.

INTRODUCTION

1. Development of industrial capability to meet defence requirements demands co-operation from industry, the military and government and the opportunity to submit a report on a perceived government/industry interface problem is welcome.

2. Syndicate members were chosen from diverse backgrounds. The experience involved with such courses is wide-ranging and the syndicate considers that appropriately channelled, considered opinions may be of assistance to such bodies as the Defence Industry Council (DIC) in developing and consolidating long term plans and may also be of interest to the defence community involved in logistics planning and management.

SCOPE OF THE PAPER

3. This paper will record observations and opinions and offer some recommendations for further deliberation on the interface between defence and industry.

LIMITING FACTORS

4. Unfortunately, all syndicate members were not able to interact within the limited syndicate group periods due largely to greater involvement with the course as a whole. The time available for the Queensland syndicate to interact and react to the development and discussion of a problem is distinctly limited and because of this, guidance in terms of a defined series of topics may permit a more effective use of Syndicate talents.

5. As the study was largely based on opinion it was to the syndicates advantage to examine syndicate papers from previous Industrial Mobilization Courses (IMC). Unfortunately, these are not catalogued. Contact with the Defence Central Library revealed only one previous IMC Syndicate Report recorded. The Diretor of Studies Clerk procedure a hand written list of 130 IMC reports. While it is appreciated that IMC reports have no official status, the deliberations of experienced people should be available as reference material for others.

DISCUSSION

The IMC 83 Queensland Course was presented with examples of constructive interaction between defence and industry. On the other hand these were issues of concern at the potential and actual decline in the capability of Australian industry to support defence, and of missed opportunities for industry to participate in defence support.

The course has seen innovative and cost effective repair and recovery operations in ship and aircraft industry. There is also impressive manufacturing capability especially in the aircraft industry. The former provides a viable realistic and recognisable support facility for defence; while the latter in the offset area provides the establishment of skills but with little or no value to the construction or support of an ongoing defence

capability. The question arises - what is the most cost effective role for industry in support of the defence forces? An effective repair and maintenance capacity with supporting indigenous industry or large scale partial manufacture by feral industry which can given little or no support to Australian defence needs.

The lack of maintenance support by Australian industry for items such as aircraft windows, adhesives, fasteners and 'O' rings was of note.

There is an apparent requirement to re-examine the defence support policy of the Government towards industry support of defence in matters such as:

a. support capacity needs to be examined in terms of its maintenance capability.

b. encouragement needs to be given to the manufacture (and coordination where the capacity exists) of maintenance items to encourage the use and growth of an Australian support base.

c. offset contracts should be suitably examined in terms of their ability to provide real maintenance support in times of emergency.

The fundamental difficulty of the absence of an adequate industry/defence research and development data base on which to evolve informed suggestions has possibly permitted prejudice to masquerade as opinion.

In terms of procurement policy the syndicate encourages the development of an Australian manufacturing capability for defence where that support leads to a sustained or realistic indigenously sourced industry. The syndicate was particularly encouraged by the Navy's program on patrol boats and the Army's program for field guns. There was concern over the development of equipments at great expense which still contained critical items of foreign manufacture. Such activities need close scrutiny to ensure stocks of vital parts can be procured in times of emergency.

The syndicate has examined previous IMC reports to gather other views in this area. Appendicies A to F are the conclusions and/or recommendations of previous IMC syndicates on Defence Research and Development in Industry. While points of detail are arguable, it is suggested that there is a broad thrust that within Industry there is a capability to assist Defence with Research and Development.

Assistance to Industry for general Research and Development (R&D) is covered by several Federal Acts of Parliament, the aims of which are stated in Appendix G. Limited interaction with the Department of Science and Technology and discussions with some Industry representatives indicated that the Australian Industrial Research and Development Board (whose telegram address is CONSCIENCE) may be under utilized. The lack of reference by the Australian Science and Technology, Council (ASTEC) to the Industrial Research and Development Incentives Board in their list of major research-funding bodies (Appendix 1 to Basic Research and National Objectives) is surprising. Lack of raw research data on the interaction of the many research-funding bodies only permits the proposition of prejudices with respect to the adequacy of relevant industrial R&D viz-a-viz funding to say the Criminology Research Council.

Appendix H, Defence Industry Committee recommendations on Industry Participation in Defence Research and Development, and the Defence Minister's response, is illuminating. Policy is stated and Defence Department initiatives are enunciated. The appendix, especially the Minister's response, indicates that Research and Development must form its appropriate priority with other Defence and Industry matters.

Appendix I is germane extracts from the Independent External Review of the Defence Science and Technology Organization (DSTO) together with the formal Departmental response to those recommendations. Policy matters are stated and the future of close Industry involvement in Defence Research and Development appears certain.

The Committee on Higher Defence Organisation in Australia comments on R&D in Industry are listed in Appendix L. That committee considered the creation of the Department of Defence Support with the DSTO Laboratories as an integral part would aid the evolution of greater Industry involvement in Defence R&D matters.

The 1983 Federal election resulted in a change of Government and the return of the DSTO Laboratories from Department of Defence Support to the Department of Defence. Extracts from the Labour Party Platform and their policy for Manufacturing Industry are listed in Appendicies M&N.

CONCLUSION

The syndicate would emphasise as a conclusion the need to develop a strong locally-sourced defence maintenance industry, and a continued ongoing requirement to critically examine the continued support of manufacturing capability where it cannot be used in maintenance or for the manufacture of locally produced defence equipment. Appropriate analysis such as that done by Ross at Central Studies Establishment, under the aegis of R&D, is possibly vital if correct informed decisions are to be arrived at.

That policy existed to aid Industry with Defence Research and Development is certain. However, rearrangement of areas of Defence and Defence Support may well have relegated such policy to very low priority as the procedures for implementing such policy are not obvious.

The interaction between the various research funding bodies is far from clear and there are some bodies which could have a close Industry and Defence consequence. There may well be a need to ensure closer formal Industry and Defence involvement with these bodies.

Appreciation of the limitations of the Industrial capacity of Australia through shortage of crucial components and components indicated that there were some areas of research and development in Australia which could be of stragetic significance in a limited conflict. the interface of Industry/Defence R&D appeared pertinent, especially in view of one of the syndicate being closely involved with industrial development. The subject has been considered by previous IMC syndicates. It is suggested that the abilities of IMC syndicates may be better used if they can build on what has alredy been established. Reports of various Committees concerning Defence, Industry, Science and etc are known to some but disection into areas of specific interest is time consuming and tedious.

RECOMMENDATIONS

The recommendations therefore are:

Recommendation 1

The Defence Industry Committee should consider seeking the Defence Ministers re-endorsement of Industry Defence Research and Development policy and seek his guidance on what procedures are extant and are proposed to implement such policy.

Recommendation 2

The Defence Industry Committee should examine its current level of interaction with the Australian Science and Technology Council and the Commonwealth Science and Industry Research Organisation with the object of improving the Australian national well-being.

Recommendation 3

IMC syndicate reports should be catalogued and available through the Defence Central Library.

Recommendation 4

A vetted list of 'authorised' perceived Defence/Industry interface problems be promulgated each year as an addendum to the Syndicate Exercise Circular.

Recommendation 5

A study pack on each 'authorised' interface problem be created and updated annually by Director of Studies Staff.

APPENDIX A

THE SCOPE FOR MORE DEFENCE RESEARCH AND DEVELOPMENT BEING DONE BY INDUSTRY - REPORT OF INDUSTRIAL MOBILIZATION COURSE SYDNEY SYNDICATE NO 3, 1973.

Recommendations:

1. Each year a percentage of the defence R&D allocation should be devoted to contractual work by private industry or other non-Government organisations.

2. A substantial proportion of these funds should go to private industries whose shareholdings are Australian-controlled.

3. The percentage of defence R&D funds devoted to contractual work should be increased each year at a rate made known publicly and guaranteed five years ahead. It is suggested that the present 10% of funds contracted could be increased to 20% in five years by equal 2% increments.

4. Contracts should be let for research as well as for development, and should include provision for:

- Government participation in project supervision
- Use of industrial research staff in a consultative capacity on defence matters.
- Adequate Official Secrets provision.

5. The choice of topics to be the subjects of contract work should be dictated by:

- The likelihood of industrial spin off
- Freedom from excessive security restrictions.

6. Where research work, leading to production is carried out by Government departments, development should be transferred to industry at an early stage to gain the benefit of production experience.

APPENDIX B

THE POSSIBLE FORMS OF GOVERNMENT ASSISTANCE NEEDED FOR DEFENCE PRODUCTION IN INDUSTRY OF ITEMS OF HIGH DEFENCE SIGNIFICANCE - REPORT OF INDUSTRIAL MOBILIZATION COURSE SYDNEY SYNDICATE NO 4, 1973

Conclusions/Recommendations

For effective overall co-ordination, we should ensure that a sound defence industrial policy is developed and disseminated to all levels of Government and Industry.

A prime requisite for industry is a strong economy and social infrastructure and the provision to industry by Government of efficient and effective transport systems, communications, and similar support. It is important for Government to plan for and implement this general base before becoming involved in more specific types of assistance.

Industry also is entitled to a stable Government policy framework within which to carry out its long term planning.

It is important that decisions to help a particular industry or part of an industry must be practical. Principles of Economics will play a big part but must not be the only measure of worth.

Any specific type of assistance should be decided upon only after consultation between the industry concerned and Government. Such competitive pressure should be maintained but where conflict exists the national interest will take precedence over the interest of the industry's owners.

Industries of high defence significance should automatically be afforded special assistance in the event of unfavourable exchange rate variations or 'across the board' tariff reductions.

There is a need to keep up with the 'state of the art' on technology in areas of defence importance. Where it is technically and economically practical to do so, production of actual defence equipment is the most satisfactory means of achieving this aim. Where manufacture is not practical, overhaul, repair and maintenance should be encouraged. As a minimum, production of commercially viable items utilising technology appropriate to Defence versions should be encouraged.

There is a definite case for the utilisation of skills and equipment available in various segments of the Services in the planning, construction and maintenance of some kinds of civic projects. This provides training for Services personnel of all ranks; the worthwhile and profitable use of field projects; and the economic employment of equipment during periods of peace.

Care should be taken to ensure that there is no propping up of industries (Government and Private) for reasons which, in the light of changing circumstances and technology are no longer valid.

APPENDIX C

THE SCOPE FOR GREATER DEFENCE RESEARCH AND DEVELOPMENT BEING CARRIED OUT BY INDUSTRY - REPORT OF INDUSTRIAL MOBILIZATION COURSE SYDNEY SYNDICATE NO 1, 1974

Conclusions

Industry undertakes currently so little defence R&D work that we find it impossible to believe there is not the scope for greater industrial involvement, particularly in the development and applied research stages.

Pure research and the test and evaluation stages would generally be more appropriately preserved outside industry and we do not see here any scope for increased industrial involvement.

Past policies have left us in the present situation where most of the facilities and trained personnel are directly controlled by the government. Thus any general increase in industrial involvement will in the first place be expensive whilst facilities are developed and people trained. Assuming a constant level of defence R&D expenditure, this would mean a net reduction in research in the short term.

If the government really wants an increased industrial involvement in defence R&D (and we are far from convinced that it does), it will only come as the result of a deliberate policy which includes the necessary incentive to industry to allow it to work at a reasonable level of profit.

If the government wants to preserve in Australia a viable defence industrial capability, we believe that a greater industrial involvement in defence R&D is desirable and probably essential. Certainly if we are to preserve any capability we must not run down the defence R&D facilities which currently exist in industry.

We believe that more cohesion is required between defence R&D activities in industry and government and the services, and between defence R&D and non defence R&D. For this reason we suggest strongly that there should be industrial representation on the Defence R&D Board, and that there should be defence science representation on the Australian Science Council when it is formed.

R&D of any sort is expensive. We believe we would get better value from our defence R&D expenditure if there was increased liaison between government, the services, and industry. We would also suggest and are of the opinion that some government R&D work and facilities are duplicated and there may well be strong grounds for rationalising government R&D facilities and activities.

We believe the incentive paid by Government to promote industrial R&D is insufficient to encourage defence R&D where there is less certainty of sustained production. Some of the taxation collected from industry goes to funding defence R&D government establishments, and we would suggest that some form of taxation relief tied to the extent of an industry's activities in defence R&D would both be appropriate and an effective incentive.

It is perhaps the combination of small market size, heavy reliance on overseas affiliates and parents in industry, and inadequate government incentive which has led to the total level of industrial R&D in Australia being so small. The advancement of such countries as USA, Japan, and West Germany is directly related to the level of R&D expenditure in each over many years. Whilst we believe there are many arguments against a wholesale expansion of defence R&D in industry, we would suggest that if Australia is to maintain its rate of growth and utilise to best advantage its fortunate natural endowment, considerably more needs to be spend on R&D in industry (and perhaps in government too) and a far sighted administration would put forward policies and incentives which would encourage such activities.

APPENDIX D

COMMUNICATION BETWEEN DEFENCE AND INDUSTRY - REPORT OF INDUSTRIAL MOBILIZATION COURSE MELBOURNE SYNDICATE NO 2, 1975

Recommendations

Accepting that considerable improvement in communications between Defence and Industry is necessary, the following recommendations are made:

a. The National Defence Policy be spelt out to Industry in so far as this is necessary to ensure that the output for present and future can contribute effectively to Defence objectives;

b. Industry be informed of the basis of the Defence Industrial Policy and of the role of the Defence Industrial Committee;

c. a nominated Senior Officer of the Defence Department, have as part of his job, the continuing responsibility of ensuring that communications between Defence and Industry are improved and maintained;

d. a Defence/Industry Information exchange Centre be set-up in Canberra with an agency in each Capital City administered by Department of Manufacturing Industry. This Group would administer a number of committees each representing a particular segment of Industry. Each of the Committees should be made up of representatives from Industry and an appropriate Government Officer to act as Chairman. These committees should be responsible for an Annual Report covering:

   (1) capabilities of the Industry Group;

   (2) changing capacity, experience, skills and forward planning of the Industry Group;

   (3) comments on the effect of other Government policies (Tariffs, monetary etc) on the ability of the Industry Groups in continuing to meet Defence requirements;

   (4) advising Industry (where appropriate) of the forward plans of Department of Defence, particularly where such advice would stimulate higher Australian Industry involvement in Defence projects; and

   (5) comment on procurement and contractural procedures as they relate to improving relations between Defence and Industry.

e. Defence/Industry Group Seminars be arranged and held frequently to encourage a positive cross-exchange of plans, capabilities and ideas; an activity which is currently highly successful with the limited range of contact provided by Industrial Mobilization Courses; and

f. that the annual Industrial Mobilization Course concept be retained as an invaluable means of propagating communications between Defence and Industry, and that this be supplemented by Seminars of IMC Graduates at a frequency of at least biennially.

APPENDIX E

METHODS OF FOSTERING DEFENCE RESEARCH AND DEVELOPMENT UNDERTAKEN BY INDUSTRY - REPORT OF INDUSTRIAL MOBILIZATION COURSE ACT SYNDICATE NO 3, 1975

Recommendations:

It is recommended that:

a. the Australian Government review its policy on the sale of Defence stores overseas and the necessary marketing organizations be established to assist the development of these new markets;

b. Defence-oriented research and development by industry should not be fostered if the available market and the sponsoring industry are reduced to an uneconomic level;

c. the funding of Australian Defence R&D establishments be reviewed with the objective of increasing the proportion of available R&D funds directed towards industrial contracts;

d. the Services continue to be encouraged towards equipment standardisation and towards reviewing the levels of sophistication being specified in equipments being purchased;

e. steps be taken to improve the communications between Services and industrial firms likely to tender for the production of equipments;

f. methods be investigated whereby the Defence vote may be augmented with the purpose of allowing, where desirable, a 'buy Australia' policy to be followed without detriment to equipping the Services;

g. a system of tax incentives be devised to encourage the fulfilment of Defence R&D contracts by Australian industry;

h. the present system of 'cost plus' contracts be replaced by a system under which cost incentives are offered to efficient contractors;

i. contract preferences be given to firms in Australia undertaking preliminary and related research leading to their ability to tender contracts; and

j. the recommendations of previous IMC syndicates, particularly those of No 3 Sydney syndicate 1973 which are relevant to this topic be reviewed in conjunction with this report and appropriate action taken.

APPENDIX F

DEFENCE RESEARCH AND DEVELOPMENT IN AUSTRALIA - REPORT OF INDUSTRIAL MOBILIZATION COURSE QUEENSLAND SYNDICATE NO 2, 1980

Recommendations

The following recommendations are made:

a. DSTO should continue to perform or manage Defence research and development, and represent Australia on appropriate international bodies, subject to:

   (1) a requirement that DSTO allots a proportion of its research and development programme for industry to undertake; and

   (2) the work retained by DSTO must be carried out in a manner which is demonstrably more efficient and timely than is possible in industry.

b. A better nationally supported means of co-ordinating the overall research and development effort, including DSTO, be established to avoid duplicated effort and facilities, wasted resources and poor performance.

c. More effective methods of liaison and information transfer should be developed and actively promoted to assist National Defence and Industrial objectives.

d. The incentives and policy structures supporting research and development be reviewed and improved by Government, along the lines discussed in this report, with particular emphasis on increasing the attractiveness of research and development as a profit centre in business and the generation of new technology.

e. Industry review and substantially improve its overall interest, capability, and capacity to perform research and development, including that available from Defence.

APPENDIX G

AIMS OF AUSTRALIAN GOVERNMENT ACTS ON RESEARCH AND DEVELOPMENT

1. Australian Institute of Marine Science Act 1972, as amended by 216/73 and 36/78.

'The functions of the Institute are:

a. to carry out research in marine science;

b. to arrange for the carrying out of research in marine science by any other institution or person;

c. to co-operate with other institutions and persons in carrying out research in marine science;

d. to provide any other institution or person with facilities for carrying out research in marine science or otherwise assist any other institution or person in carrying out research in marine science;

e. to collect and disseminate information relating to marine science and, in particular, to publish reports, periodicals and other papers relating to marine science; and

f. to do anything incidental or conducive to the performance of any of the foregoing functions.'

2. Australian Science and Technology Council Act 1978, Number 81 of 1978.

'The functions of the Council are to investigate, and to furnish information and advice to the Commonwealth Government in respect of, matters relating to science and technology, including the following matters:

a. the advancement of scientific knowledge;

b. the development and application of science and technology in relation to the furtherance of the national well-being;

c. the adequacy, effectiveness and overall balance of scientific and technological activities in Australia;

d. the identification and support of new ideas in science and technology likely to be of national importance;

e. the practical development and application of scientific discoveries;

f. the fostering of scientific and technological innovation in industry; and

g. the means of improving efficiency in the use of resources by the application of science and technology.'

3. Industry Research and Development Grants Act 1967, Number 51 of 1967; as amended by 59/72, 201/73, 216/73, 20/74, 85/76 and 91/76.

'Object: to promote the development of Australian Industry by encouraging increased research and development in Australia'

4. Industrial Research and Development Incentives Act 1976, Number 85 of 1976; as amended by 36/78, 211/78, 44/81 and 80/82.

'Object: to promote the development and improve the efficiency of Australian Industry by encouraging industrial research and development in Australia in matters relating to science and technology.'

5. Science and Industry Endowment Act 1926, Number 21 of 1926; as amended by 13/49 and 36/78.

'Fund to be utilized for the purpose of Scientific and Industrial Research'

6. Science and Industry Research Act 1949, Number 13 of 1949; as amended by 78/59, 93/66, 7/68, 52/68, 216/73, 20/76, 91/76, 36/78 and 143/78.

'The functions of the Organization are

a. to carry out scientific research for any of the following purposes:

(1) assisting Australian industry;

(2) furthering the interests of the Australian community;

(3) contributing to the achievement of Australian national objectives or the performance of the national and international responsibilities of the Commonwealth;

(4) any other purpose determined by the Minister:

b. to encourage or facilitate the application or utilization of the results of such research;

c. to act as a means of liaison between Australia and other countries in matters connected with scientifc research;

d. to train, and to assist in the training of, research workers in the field of science and to co-operate with tertiary-education institutions in relation to education in that field;

e. to establish and award fellowships and studentships for research, and to make grants in aid of research, for a purpose referred to in paragraph a.;

f. to recognize associations of persons engaged in industry for the purpose of carrying out industrial scientific research and to co-operate with, and make grants to, such associations;

g. to establish, develop and maintain standards of measurement of physical quantities and, in relation to those standards:

(1) to promote their use;

(2) to promote, and participate in, the development of calibration with respect to them; and

(3) to take any other action with respect to them that the Executive thinks fit;

h. to collect, interpret and disseminate information relating to scientific and technical matters; and

j. to publish scientific and technical reports, periodicals and papers.'

APPENDIX H

INDUSTRY PARTICIPATION IN DEFENCE RESEARCH AND DEVELOPMENT - REPORT BY DEFENCE INDUSTRY COMMITTEE - SUB-COMMITTEE ON RESEARCH AND DEVELOPMENT, MARCH 1980

Response by Minister for Defence 6 June 1980

Recommendation 1

That funds be made available to the DSTO to fund R&D tasks associated with projects for which funds have not yet been specifically approved. A small initial budget of, say, $1m is recommended, the amount to be reviewed with the objective of increasing it in the light of progress made.

Response

'As you know, the Prime Minister and I have both spoken in Parliament about new Defence outlay initiatives. One of these concerns greater industry involvement in Defence matters including R&D. Consequently, bids for authorisation of funds to the extent you have recommended have been made by my Department in the 1980/81 Estimates. You will understand that such Departmental bids will have to withstand the usual budget scrutiny but I am hopeful that there will be no untoward reduction in my Department's allocation and these initiatives can begin in fiscal year 1980/81.'

Recommendation 2

That Defence pursue with the Department of Administrative Services ways to reduce the deficiences of the present tendering system as they apply to R&D tasks. In particular, some form of period or term contract arrangement under the management of the DSTO should be given serious consideration.

Response

'Please be assured that my Department is very active in attempting to streamline procedures and reduce delays. Discussions are continually being held with the Department of Administrative Services to improve the situation. The problems relating to the placement of R&D tasks will be considered as they arise, noting the aspects raised in the report.'

Recommendation 3

That when negotiating offset opportunities with overseas suppliers, the Department use whatever contractual leverage exists to actively pursue the possible achievement of R&D contracts relating to alternative products or future models of the same product. Exploitation of the opportunities presented, however, rests with the commercial initiative and capability of Australian firms.

Response

'The contractual leverage that Australia can exert in its relatively small overseas purchases of major military equipment, often from a sole source supplier, tends on the whole to be much less than is popularly believed. Be assured that Departmental procurement officers will continue to exploit every opportunity that may arise and emphasis will be given to seeking R&D tasks whenever circumstances permit.'

Recommendation 4

That every opportunity be taken to further develop the practice of holding seminars and presentations on research and development activity, both by Defence research establishments, and by industry on company premises.

Response

'I am advised by the Acting Chief Defence Scientist that further seminars are planned. You should be aware that in the paints and chemical fields such a Seminar has already been held.'

Recommendation 5

That Defence continue to participate in the Public Service Board's Interchange Program and that industry be encouraged to second personnel at an appropriate level to Defence to foster a greater awareness of mutual R&D activities and of the environment in which they are conducted.

Response

'Two Defence Science and Technology officers have completed six months secondment with metallurgical laboratories in industry. My Department is awaiting return secondments from industry. Such secondments will be supported wherever advantages can accrue to both industry and Defence.'

Recommendation 6

That a Liaison Officer be designated by Defence to arrange seminars, presentations, interchanges and secondments, and that he develop a positive program for the implementation of these activities.

Response

'A number of functional areas of my Department, such as Defence Industry and Materiel Policy, Defence Science and Technology, and Director of Public Information already have responsibilities for the various initiatives suggested. You are no doubt aware of my Department's Defence seminars already given in Perth and Adelaide and another to be held in Brisbane shortly. It will be necessary to closely examine the various arrangements to determine the best way to implement this recommendation and I propose that this be done.'

Recommendation 7

That the DIC and Defence encourage firms to seek overseas R&D work, whether commercial or military oriented, with a view to developing centres of excellence able to serve wider overseas markets such as those presented by the South East Asia area.

Response

'In assisting industry to take up offsets and AIP opportunities, Departmental officers encourage firms to look to wider markets whenever possible. In addition, where my Department establishes a specialised capability in industry, the recipients are expected to utilise the capability for commercial purposes, in which case a nominal rental charge is made for the use of Commonwealth equipment.'

'You may wish to consider this recommendation within the DIC and advise me whether a constructive role exists for the DIC in this regard.'

Recommendation 8

That the question of DSTO or industry stewardship of technology facilities be examined case by case as it arises, and that every effort be made to avoid unnecessary duplication of facilities.

Response

'Similar recommendations have been made by ASTEC and the Senate Committee on Science and the Environment. My Department is already preparing advice for me in this regard and I shall ask them to also consider your proposal.'

Recommendation 9

That Defence actively participate in wider discussions relating to Government support for technology and industrial development going beyond the field of defence to ensure that Defence requirements are recognised and Australia's technological base is developed to the widest practicable extent.

Response

'I am aware of the need to ensure that defence requirements are recognised in the wider development of Australia's technology base. My Department is very active if not always prominent, in such matters and participates whenever it is appropriate for it to do so. The defence implications of issues will tend to vary considerably as will our ability to influence the course of events.'

APPENDIX I

INDEPENDENT EXTERNAL REVIEW OF THE DEFENCE SCIENCE AND TECHNOLOGY ORGANISATION - REPORT OCTOBER 1980 AGPS, CANBERRA 1980

Response by Defence Press Release No 156/81

Recommendation 31

Greater emphasis be given to publicity about DSTO's work and achievements to ensure that the general public, industry and academic institutions, among others, are better informed on these matters.

Response

Accepted. Some initiatives are already in hand. Emphasis on publicity of the DSTO has been increased and the External Relations Branch, established in 1979, includes this in its roles.

Recommendation 32

Action should be taken to formulate and implement a policy of closer interaction with and exploitation of existing and potential research and development capabilities of universities and colleges of advanced education, in particular, through the provision of additional budget funds for supporting research and development contracts.

Response

Accepted in principle. The Government is currently considering an ASTEC report entitled 'Interaction between Industry, Higher Education and Government Laboratories'. Within the DSTO, interaction at a modest level is underway in the form of Defence Research Groups, within which the DSTO and the civil science community combine to study problems of relevance to defence and of interest to civil science. The Government also accepts the need to increase funding for contracted research and to plan funding for areas of technology for the perceived life of the technology.

Recommendation 33

Staff exchange programs with academic institutions should be promoted to capitalize on the changed attitudes to defence-related research and study-leave provision in these institutions.

Response

Accepted. The procedures governing staff exchanges are already established and a number of exchanges have occurred. The Department of Defence is directed to encourage greater use of the facilities for staff exchanges to promote greater interaction between the DSTO and the civil research community generally.

Recommendation 34

Unique facilities or expertise within DSTO Establishments should be available for use by, or for the solution of the technical problems of, non-Defence academic, governmental and industrial organisations.

Response

Accepted, subject to the qualification that Department of Defence resources are specifically obtained for Defence purposes which must have priority for their use.

Recommendation 35

Co-operative programs with universities and colleges of advanced education in upper atmosphere research should be re-established.

Response

Not accepted. Previous programs in upper atmosphere research were terminated because of insufficient defence importance to justify the significant resource requirement. The situation has not changed.

Recommendation 36

A Defence Preparedness Association should be established to involve scientists and technologists from universities, colleges of advanced education, Federal and State Government departments and statutory authorities, and industry, in active discussions of defence science matters and in the generation of proposals for co-operative programs of work.

Response

The Government accepts that there is a need to promote defence science and technology issues. However, it considers that the need for, and the form of, a Defence Preparedness Association should be carefully studied in consultation with industry and tertiary institutions as an initial step. The Department of Defence is directed to investigate the proposal.

Recommendation 37

A policy should be adopted for expansion of the research and development capabilities of manufacturing industry through the provision and application of additional budget funds for supporting research and development contracts.

Response

Accepted in principle. It is Government policy to foster the research and development capabilities of industry through contracted research.

Recommendation 38

A financial incentive policy should be adopted for the active encouragement of the development of manufacturing industry, particularly in the high science-content area, both on a national basis and within the defence industry sector. Defence equipment commitment should be firm at a sufficiently early stage in a development program to allow industry adequate time to prepare for production.

Response

The Government carried out a comprehensive review of the Industrial Research and Development Incentives 1976 Act in 1980 as part of its consideration of the Report of the Committee of Inquiry into Technological Change in Australia (CITCA Report) and other reports from expert Committees including ASTEC. Under the upgraded program announced in Parliament on 18 September 1980 commencement and project grants and public interest projects are to continue for a further five years. It is also Department of Defence practice to encourage the early involvement of industry in major equipment projects. There can however be no unconditional commitments to such projects. The Department of Defence is directed to continue the current policy of emphasising local industry's role and the selective funding of specific capabilities in developing acquisition strategies.

Recommendation 39

There should be a more active promotion of manufacture for commercial purposes of new developments arising from the research and development programs of DSTO Establishments, particularly novel scientific instruments.

Response

Accepted. However such activity must be secondary to the defence role of the DSTO.

Recommendation 40

The governmental policy on the export of defence materiel should be revised to allow industry to develop economically viable manufacture.

Response

The recommendation is noted. However, the Government reaffirms its policy that the export of defence materiel will continue to take account of all relevant policy matters.

Recommendation 44

To ensure the more effective use of available financial resources, various aspects of financial control, including transfer of funds between budget dissections and commitment of funds for placing R&D contracts with non-Defence bodies, should be delegated to heads of Establishments.

Response

The recommendation highlights a number of areas related to the day-to-day operations of the DSTO which can detract from the Organisation's effectiveness. The Department of Defence is directed to examine the recommendation in conjunction with Recommendation 2 of the Internal Review.

APPENDIX J

INDUSTRIAL RESEARCH AND DEVELOPMENT: PROPOSALS FOR ADDITIONAL INCENTIVES A REPORT TO THE PRIME MINISTER BY THE AUSTRALIAN SCIENCE AND TECHNOLOGY COUNCIL GPS, CANBERRA, 1980

1. Summary and Recommendations

1.1 The roles of technology, innovation and industrial research and development (IR&D) within Australia have been studied in some depth in recent years, for example by the Organisation for Economic Cooperation and Development (OECD), by inquiries established by the Commonwealth Government, and by the Senate Standing Committee on *Science and the Environment*. In all these studies the vital importance of technological development and of innovation to Australian industry was emphasised and the need for its stimulation recognised. In Volume 1A of its report 'Science and Technology in Australia 1977-78', ASTEC made several recommendations regarding R&D. Two of these recommendations were referred to ASTEC for further examination. These concerned the small percentage of R&D funds which are used for experimental developoment, and the need to contract more government R&D to industry. Also in Volume 1A, ASTEC indicated its intention to examine the use of taxation incentives to encourage industrial R&D. This report considers these three matters and provides conclusions and further recommendations.

Experimental Development

1.2 Expenditure on experimental development within Australia is low by international standards, even though the total Australian research effort is broadly comparable with that of other industrial countries. There are two principal factors contributing to this inadequate development effort:

- a sharp drop in R&D investment by Australian industry from a level which was already low in 1973-74; and
- a low level of direct government support for industrial R&D, on an international comparison.

1.3 The Commonwealth Government has already taken a number of initiatives to redress the situation; it has substantially increased the support provided through the Industrial R&D Incentives Scheme, established a fund for energy research, development and demonstration projects and provided support for several programs which have the general aim of increasing the innovative capability of industry. The introduction, in conjunction with the above, of a program for increased contracting to industry of government R&D requirements and of tax incentives for increases in R&D expenditure by industry, together with the creation of an equivalent of the (UK) National Research Development Corporation, will in ASTEC's view provide a balanced set of incentives to industry for R&D and innovation.

Contrating Government R&D to Industry

1.4 Contracting to industry of appropriate government R&D would be an effective means of encouragement, providing a powerful incentive to industry to improve and increase its R&D capability. Contracting-out also provides a means by which government can influence industrial effort towards national goals and interests; it would help to ensure that strategic and high-risk mission-oriented R&D is not neglected by industry; it would provide an effective coupling of the R&D activity to the other components in he innovation process; it would increase the level of interaction between sectors; and it would ensure that technological advances are effectively assessed and utilised.

Recommendation 1

That the Government adopt and announce a policy to contract an increasing proportion of its R&D requirements to industry.

1.5 In the USA and some European countries, the process of contracting-out has become so integral a part of the system that procedures to ensure compliance are unnecessary. Australia has not reached a similar position. Some measures to encourage and monitor compliance with a conatracting-out policy will be required.

Recommendation 2

That government departments and agencies:

a. examine their ongoing and planned activities with a view to giving greater attention to the placement of R&D contracts with industry;

b. establish procedures to identify in-house projects which hold promise of commercial application and which are judged to be at the stage at which industrial participation is desirable;

c. identify requirements for work which is classified as 'related scientific activities';

d. following consideration of the above matters, prepare a program for proposed R&D contracts with industry; and

e. report via their annual reports on the extent and nature of contractual arrangements made.

1.6 ASTEC considers that the procurement/contracting responsibilities should remain with the client departments, but that there should be a small central R&D policy group having advisory and co-ordination functions.

Recommendation 3

a. that the Minister for Productivity establish a small, central R&D contracting policy group with responsibility for general policy advice on, and coordination nd evaluation of, the R&D contracting-out program;

b. that the group maintain a register of companies equipped to undertake R&D and technical services;

c. that the group be given the responsibility to publicise R&D contract opportunities; and

d. that the performance of this unit be monitored for the initial period of its operation, and that the administrative arrangements be reviewed after three years of operation.

1.7 The Canadian Government has extended its contracting out policy to accommodate unsolicited proposals from industry which support government science missions, and also those which meet a priority science and technology requirement. ASTEC sought views on the value of this scheme from both government and industry in Canada and was impressed by the unanimous view that it has been exceptionally successful. the Public Interest Research Projects Scheme, administered by the Department of Productivity, is basically structured to met a purpose similar to that of the Canadian scheme. The Industrial Research and Development Incentives act provides for an advisory committee to advise the Minister on matters encompased by the legislation, and a small committee exists at the moment. ASTEC believes that this committee should be reconstituted as a matter of urgency, with some members drawn from the industrial and academic sectors, and it should be asked to assess, and advise on (in consultation with the Australian Industrial Research and Development Board), all projects submitted for support under the Public Interest Research Projects Scheme.

Recommendation 4

a. that the funds available for the Public Interest Research Projects Scheme be steadily increased over the next five years; and

b. that the criteria and terms of reference for the Scheme be examined and, if necessary, modified to promote its use as a means of supporting unsolicited proposals and the development by industry of inventions and innovations originating in government laboratories.

1.8 Department and agencies should be expected, in the course of time, to reallocate a proportion of their funds for R&D activities from internal use to the procurement of the required services through the contract mechanism. However, such reallocations cannot be implemented rapidly without severe disruptions. ASTEC therefore believes that the Government, when considering the appropriations of departments and agencies, should encourage an expansion of contracting-out R&D activities by providing additional funds. In particular, any new program involving R&D should be critically examined with the aim of allocating funds to industry wherever possible.

1.9 There is one avenue that may permit more rapid promotion of contract R&D which does not involve the complex problems of reallocation of government funds: the possibility of R&D off-set contracts associated with the purchase of overseas equipment which cannot be purchased here. It may be noted that in the execution of the Government's offset policy the Department of Productivity already encourages overseas suppliers to place R&D contracts in Australia as a means of discharging their offset obligations.

Recommendation 5

That prior to placing substantial orders for equipment overseas, government departments and agencies should explore, in cooperation with the Department of Productivity, the possibility of securing partial offsets from the overseas supplier through R&D contracts for Australian companies which manufacture equipment or components made or used by the supplier, whether in the goods covered by the order or in other goods.

1.10 The focus of a contracting-out policy must be the industrial sector. It would be foolish, however, to ignore the expertise and facilities of universities and colleges of advanced education. All resources need to be used as effectively and efficiently as possible to meet the technological challenges which confront us, and on occasions it will be appropriate for a department or agency to contract out work to a tertiary education institution. There should also be strong encouragement for companies to sub-contract appropriate sections of R&D contracts to universities and colleges of advanced education.

Recommendation 6

That procedures be adopted to encourage the involvement of universities and colleges of advanced education in the R&D contract program through sub-contracting arrangements with industrial firms.

Taxation Incentives for Industrial R&D

1.11 Taxation incentives for R&D, whereby all or part of the expenditure related to R&D may be claimed against taxable income at a rate exceeding 100%, are used by several countries, in addition to other support mechanisms, to stimulate investment in R&D by industry. ASTEC is attracted to a premium taxation scheme for R&D expenditure, considering that such a scheme has particular characteristics which complement the present government incentives and the other proposals.

1.12 Australian industry provides a lower percentage of the gross expenditure on R&D than is the case in other industrialised countries. The pressing need is, therefore, for companies in Australia to increase the commitment of their own funds to R&D; a taxation incentive for increases in revenue expenditure on R&D over that in previous years is suited to this objective. However, ASTEC understands that many enterprises would be unable to separate previous years' R&D expenditure from existing records, and there needs therefore to be a special introductory arrangement for an incentives scheme, to provide a base for R&D expenditure.

Recommendation 7

That a tax incentive scheme for industrial R&D expenditure in Australia be introduced which:

a. for the first year allows a deduction from taxable income of 10% (further to the standard 100% deduction) for all revenue expenditure on R&D;

b. for the second year, allows a deduction of 40% for real increases in revenue expenditure over that in the first year;

c. in the third year allows a deduction of 40% for real increases in revenue expenditure over the average of the previous two years; and

d. in subsequent years, allows a deduction of 40% for real increases in revenue expenditure over the average of the previous three yeas.

APPENDIX K

INTERACTION BETWEEN INDUSTRY, HIGHER EDUCATION AND GOVERNMENT LABORATORIES
A REPORT TO THE PRIME MINISTER BY THE AUSTRALIAN SCIENCE AND TECHNOLOGY COUNCIL
AGPS, CANBERRA, 1980

1. Summary and Recommendations

1.1 Increased interaction between industry, government and higher education has considerable benefits to researchers, to their firms, agencies or institutions, and to Australian research and development (R&D) generally. These benefits outweigh the costs involved in establishing and operating formal schemes which will promote useful levels of interaction.

1.2 Interaction in agriculture and the mining and mineral processing industries is generally satisfactory, although opportunities should be taken to maintain or increase interaction, particularly by secondments or interchanges of staff. The structure of the Australian manufacturing sector is not so conducive to interaction, and there is scope for increased government sponsoring of interaction, in the interests of restoring the vigour of Australian industrial innovation.

1.3 Mechanisms which ASTEC supports, and believes should be promoted, include:

- use of advisory councils and committees to government research agencies;
- interchange of staff betwen government and industry laboratories;
- increased use of seminars and workshops between government and industry;
- use of 'incubator' schemes which encourage industry to use vacant space or unused equipment in government laboratories;
- contracting of government R&D to industry, as recommended in a recent ASTEC report and now accepted by the Government;
- increased access to venture capital to allow the industrial development of research discoveries made in government or tertiary education institutions;
- changes to university study leave arrangements, and the use of appointments of industrial researchers to part-time or visiting academic posts;
- development of more industry research committees;
- use of short refresher courses for industrial researchers in universities, and of 'sandwich' courses.

1.4 Four mechanisms have been identified by ASTEC as being particularly suitable for increasing interaction between australian manufacturing industry and government and academic institutions. These are industrial fellowships, research associations, industry-tertiary education co-operative research projects, and a scheme for increased technology transfer.

1.5 Industrial fellowships would provide worthwhile opportunities for interested academic staff to spend time in industrial laboratories. ASTEC believes that the Government should provide approximately half the salary, and salary-related costs of each fellow, while the host organisation should cover the remainder of the fellow's salary and any other costs. A proposal for a three-year pilot program, operating along these lines is being developed by the Minister for Science and the Environment. It would involve about 15 fellowships in the first year, rising to 30 in the second and third years. This would cost the Government about $160,000 in the first year, and $320,000 in each of the subsequent two years.

Recommendation 1

That a three-year pilot program of industrial fellowships be implemented.

1.6 Research associations provide a highly suitable vehicle for solving the research problems of some manufacturing firms, particularly smaller firms with no in-house R&D activity. ASTEC believes that one effective type of research association for manufacturing industry is that which acts as a contracting broker. Research associations may also need to establish facilities and conduct research if suitable facilities are not otherwise available. Moreover, research associations should operate in areas of common interest to substantial groups within manufacturing, for example on techniques or problems common to a wide range of manufacturing firms. ASTEC welcomes the recently-announced Government decisions on an active program to assist research; associations, on the continuation of block grants to existing associations, and on assistance to new associations. ASTEC is of the opinion that, in the interest of greater interaction and to support the raising of technological standards among smaller firms, there is scope for the establishment under this program of up to five new research associations, at a cost to the Government of up to $1 million per annum.

1.7 Co-operative research projects, involving researchers from higher education and industrial researchers working together on projects of interest to industry, have been promoted by the Australian Industrial Research Group (AIRG), a group of about 50 industrial research managers from Australia's larger manufacturing andmining companies. ASTEC endorses the AIRG program as a means of aligning a proportion of academic R&D with industry, and suggests that incentives should be given to stimulate these activities. This could be done through the Australian Industrial R&D Incentives (AIRDI) Scheme, with modification as necessary of the existing legislation. Steps also need to be taken to make such co-operative research grants relatively more attractive than the standard AIRDI project grant. It is expected that, in the first instance, and amount of about $0.5 million per annum needs to be provided, to support 10 to 20 major projects.

Recommendation 2

That a pilot program of co-operative research grants be established under the Australian Industrial Research and Development Incentives Act 1976 (amended as necessary), taking into account the operations of the UK Special Co-operative Research Grants program.

1.8 More effective technology transfer is essential to the continued health of the manufacturing sector. This can in part be achieved by increasing interaction between industry and government and academic laboratories. One means of doing this requires the establishment of a technology tansfer network employing highly qualified and experienced professionals, able to provide effective links between researchers and those with knowledge, and potential users of new technology. The Department of Productivity has recently established a pilot program in technology transfer. ASTEC commends this development and believes that such a program needs to be complemented by the inclusion of a Technology Information Service along the lines of that operated by the Canadian National Research Council. This could be achieved at a cost of $2.5 million per annum.

Recommendation 3

That the activities of the Technology Transfer Council be upgraded and broadened in scope, including bringing a scheme similar to the field-service aspect of the Canadian Technical Information Service into the program.

THE HIGHER DEFENCE ORGANISATION IN AUSTRALIA - FINAL REPORT OF THE DEFENCE REVIEW COMMITTEE 1982, AGPS CANBERRA 1982

The DSTO - Defence Industry Interface

7.21 Professor Fink submitted that, within the limits of available resources, the interface between DSTO and defence industry was operating effectively with the exception of the technical support of the Government's defence factories, particularly the munitions factories. He considered that a changed attitude towards scientific and technical support on the part of factory personnel was necessary. In his view the key to improved R&D support to defence industry lay in the provision of increased resources rather than reorganisation.

7.22 We are not suggesting that the establishment of the Department of Defence Support will necessarily bring about a dramatic increase in the level of industry's involvement in defence R&D, or that DSTO's resources should be diverted from some of its other tasks for this purpose. However, by bringing the defence factories and the R&D laboratories together within the same organisational framework, the new departmental environment should provide better scope for addressing the acknowledged deficiencies in the relationship between the two areas without any suggestion of downgrading the role of the laboratories to that of an appendage to the factories. In addition, while recognising that opportunities for increased industry involvement in defence R&D may be limited, we believe that the Department of Defence Support will be able to foster the development of an interface between defence science and industry in which all the available opportunities for industry's increased involvement are pursued in a better co-ordinated and more sustained manner.

Appendix 7.4

Interaction with Industry

38. DSTO has two specific 'industry-oriented' roles which reflect the need for it to interact with industry. These are to:

a. co-ordinate industry participation in research and development of relevance to the DSTO program; and

b. provide, as required, technical advice and support to assist industry in defence projects.

In the above context the term 'industry' can be taken to include both the government-owned defence factories and private companies whose manufacturing and research activities are directed towards meeting defence requirements.

39. The External Review found that there were deficiencies in the relationship between DSTO and industry and proposed a number of measures aimed at fostering development of the R&D capabilities of industry, encouraging the early involvement of industry in major equipment projects, and promoting commercial exploitation of new developments arising from the R&D programs of

DSTO establishments. The Government accepted these recommendations, noting in the case of the first two matters that the recommendations largely reflected government policy.

40. Greater interaction between DSTO and Australian industry can provide mutual benefits and further the Government's goal of increased self-reliance in the national infrastructure supporting defence, thus enhancing the nation's overall defence capability. There are of course limits to the extent to which this interaction can be improved, not the least being constraints on the level of funds which can be provided to finance defence-related research tasks in industry. We see the Department of Defence Support as fostering the necessary interaction between defence science and the government-owned sector of defence industry through having both elements located in the same department. At the same time there would be increased scope for fostering greater interaction between defence science and the private sector of defence industry as a result of the industry development and marketing roles to be assumed by the Department of Defence Support, involving day-to-day contact with industry on a wide range of matters relevant to the development of industrial capabilities for defence purposes and the promotion of locally developed defence products. Therefore, while we recognise that opportunities for increasing industry's involvement in defence-related R&D tasks may not be great, as a recent report has suggested, we envisage the Department of Defence Support concept as maximising the available opportunities for improving the defence science - industry relationship.

APPENDIX M

AUSTRALIAN LABOR PARTY PLATFORM, CONSTITUTION AND RULES AS APPROVED BY THE 35TH NATIONAL CONFERENCE, CANBERRA 1982

6. DEFENCE

Labour believes that, to achieve the objective of a secure Australia, defence supplies and equipment should, where practicable, be procured within Australia.

Labor will:-

15 Encourage Australian industries capable of conversion to defence production in time of war under an overall industrial mobilisation plan.

16 Ensure that procurement which of necessity is placed abroad, is obtained under contracts affording the maximum offset purchasing advantages to Australia, the maximum scope for manufacture under licence within Australia and the maximum opportunity for technology transfer.

17 In pursuit of the material development of the nation, and consistent with Labor's urban and regional development and transport policies, develop Ports, airfields, railways and roads which will contribute to the mobility of the defence forces as well as to the material development of the nation.

18 Ensure exclusive government control over and the strictest regulation of the manufacture and export of arms and munitions and maximise public ownership in industries manufacturing arms and munitions.

15. INDUSTRY DEVELOPMENT

Labour will:-

21 Stimulate the level of industrial research and development activity in Australia through the provision of financial incentives, venture capital and through Australian industry participation and offset arrangements in relation to government procurements. Further, development arrangements to provide for a higher level of technology transfer, including arrangements which expand Australia's capability to produce new technologies.

19. SCIENCE AND TECHNOLOGY

The Australian Labour Party:-

4 Rejects the colonial model of technology transfer which has been adopted in Australia in which high technology is over-whelmingly under foreign ownership.

5 Declares that Australia must asert its own technological sovereignty and reverse the declining capacity of individual nations to determine their own economic goals in a global economy. Foreign investment guidelines must be amended to ensure transfer of technology into Australian control and arrangements to expand Australia's capability to produce technologies at the leading edge of development.

12 Recognises that rising levels of investment in higher education and R&D have a decisive impact on increasing both the quality of life and economic standards.

A Labor government will:-

14 Collaborate with industry to provide appropriate incentives to raise total investment in selected areas of socially constructive research and development, to the equivalent of other technologically advanced countries.

15 Require foreign owned corporations in Australia to invest appropriate sums in R&D and to give Australian enterprises acess to foreign owned technology.

16 Extend eligibility for Special Research Grants (now limited to universities) to projects in all branches of tertiary education.

17 Encourage excellence in a diverse range of pure research projects through the Australian Research Grants Committee.

18 Establish a national research, development and innovation division within the Department of Science and Technology to advise the government on:

a. R&D grants to industry;

b. co-ordination of government supported R&D generally;

c. ways to improve industry through technological innovation;

d. directing support to programmes which increase the ability of Australian owned firms to capitalise on technologies which increase employment in new fields, particularly those based on natural resources and requiring a high skill content;

e. co-ordinating government impact on high technology industry through its roles as customer, supporter of R&D and financer;

f. working with existing industries, and through industry based committees, to encourage them to make an adequate contribution to R&D - either within their own enterprise or by contributing to a common fund (with the benefit of tax incentives and priority access to innovations); and

g. assisting industries with the development of research discoveries and the preparation of patents where appropriate.

19 Extend eligibility for industrial Research and Development incentive (IRDI) Grants to all types of computer software.

20 Provide for IRDI grants to be tax free.

21 Seek the transfer of technology to Australian control in areas of foreign exploitation of our natural resources, while encouraging the intensive development of indigenous technology, as illustrated by Norway's rapid advance in offstore oil-rig technology.

22 Develop arrangements with foreign suppliers for the transfer of technology development capability to Australia in order to promote appropriate new industries and services. Included in such arrangements will be measures to enable Australian management and labour to gain necessary skills, to provide for the storage and processing of information in Australia and means for the production in Australia of capital goods.

23 Examine existing technology agreements with a view to reducing costs and limitations on local use and encouraging the development of intermediate or labour intensive technologies where appropriate.

24 Liaise with other countries and with Australian-owned companies to develop a pool of information on prices, technology agreements and related issues.

25 Examine the long-term implications of highly sophisticated and integrated technology on Australia's capacity for local control and national autonomy.

26 Ensure that overseas controlled 'high technology' industries operating in Australia pay levels of taxation not less than those paid by Australian owned enterprises.

27 Participate with and seek the collaboration of trade unions and private enterprise in joint ventures by providing risk capital, facilities and exprtise as required and as seems appropriate to establish new industries based on scientific and technological innovation.

28 Assist small business enterprises selectively, in high, intermediate and existing technology by setting up an investment fund to provide risk capital either on the basis of public equity or by government loans.

29 Support whole technologies rather than the manufacture of isolated components so that Australia is encouraged to develop integrated and comprehensive technological skills.

35 Establish machinery to assist and inform the public and decision makers by way of adversarial reports on specific matters, as has been undertaken in the United States by the Office of Technology Assessment, and by stimulating public discussion of the long term implication of technologically based social change as has been achieved by the Commission for the Future in New Zealand.

36 Expand and rotate membership of the Australian Science and Technology Council (ASTEC) to enable it to act as a planning council to examine medium-term implications of technological based social change, act as a focal point for a process of consultative planning, and to submit advice to governments on general or specific priorities.

37 Recognise the need for greater scientific knowledge and data availability in areas pursued by significant community movements, such as consumer affairs and environmental areas, and ensure that government science bodies respond to these needs.

38 Maintain the Commonwealth Scientific and Industrial Research Organistion (CSIRO) free from Public Service Board control.

39 Encourage CSIRO to diversify its research activities in new fields such as information technology, safety, transport and the environment.

40 Encourage CSIRO to disseminate public information reference services directly to the community, where appropriate.

41 While recognising the priority of the National Health and Medical Research Council, lift any arbitrary exclusion of CSIRO from pursuing areas of biological research which have human health implications.

42 Ensure that new technologies developed by CSIRO are used to promote export potential and high technology employment in Australia.

43 Strengthen Australia's participation in international scientific activities, including science representation in foreign missions and UNESCO, promoting scientific exchange agreement and encouraging interchange of scientific personnel.

APPENDIX N

NEW DIRECTIONS FOR AUSTRALIAN INDUSTRY
A.L.P. POLICY FOR MANUFACTURING INDUSTRY

JOHN DAWKINS, M.P.
SHADOW MINISTER FOR INDUSTRY AND COMMERCE

Reconstruction and Recovery in Australian Industry

A Labor government will implement a policy package designed to bring about a substantial reconstruction of Australian industry. This package will cover the areas below:

(f) Research and Development

One of the principal causes of Australia's poor industrial performance has been the dismal level of investment in total Research and Development (government plus industry). A Labor government will work to double R&D investment over ten years, on the basis that industry aided by suitable incentives should be able to contribute the bulk of this increase. In the past, industry's efforts have been poor, largely because it has fed off Head Office research conducted outside Australia. This can be corrected by incentives, such as making industrial R&D grants tax free, and by using tax incentives; priority access to innovations to encourage greater contributions to industry based research and a requirement that foreign investors base significant research and development programs in Australia.

Labor will revise and extend the Industrial Research and Development Incentive Scheme to provide for non-taxability of grants and for equity or debt participation by government rather than grants in appropriate circumstances.

This scheme will be extended to include research into all types of computer software, most of which are currently excluded from the scheme.

The Australian Research Grants Scheme will also be expanded by a three year program to increase the real value of such grants by 33 per cent so as to strengthen our basic research capacity.

A number of Australian universities and colleges of advanced education already operate consulting companies. These companies offer services and facilities in a wide range of fields, including science and engineering, business and administration, health, social sciences, and computing.

Clients include private enterprise, the government sector, and private individuals.

The nature of the consulting work varies from fairly routine testing and analysis, to advanced research and design.

The turnover from project fees for seven college and university consulting companies totalled about $2 million p.a. three years ago.

This consultancy work, as well as other contact with industry, demonstrates the willigness of many educational institutions to promote useful interaction with industry. That willingness is recognised, and reciprocated, by industry.

Many academics are also recognised by granting bodies as being capable of, and willing to undertake, research work of high quality.

Labor will:-

- harness the existing skills and experience of Australia's applied researchers, for an immediate effort to improve the quality of Australian industry, through invention and innovation; and

- establish lasting and productive interaction between applied researchers, whether they work in tertiary education institutions, private industry, or government laboratories.

Recognising the existence of many of the basic resources at colleges of advanced education, Labor proposes to establish, or extend, centres of applied technological research at leading colleges of advanced education in each State.

The scheme will, initially:

- concentate in areas of:
  - demonstrated demand for innovative R&D;
  - proven technical expertise and skills;
  - scope for future industrial expansion;
- use as far as possible existing equipment and facilities.

j. <u>Developing Defence Industries</u>

- Review the opportunities which exist for industry from defence supply, including, by extending the process of consultation on capabilities, the identification of equipment requirements, research and development, production post-delivery support, maintenance and modification.

- Establish a long-term domestic supply capability which, subject to the nature of the equipment and factors such as scale economies, aims at standardisation of components with existing domestic supply, increased functional efficiency and so on.

- Re-examine the system of tendering for major equipment programs and modify the system where it increases the cost estimates of local suppliers compared with overseas suppliers or in other ways works against the development of long-term sources of supply.

- Introduce a system of appeal which will enable any proposed overseas purchase of restrictive specification to be challenged, except for items specified by the Minister for Defence.

- Require the Department of Defence Support to explain why a purchase order is placed overseas instead of in the domestic market.

- Ensure Australian Industry Participation (AIP) details included in contract conditions where defence purchases from overseas are unavoidable even after specifications have been drawn to allow maximum Australian industry involvement.

APPENDIX O

INCENTIVES FOR INNOVATION IN AUSTRALIAN INDUSTRY. A REPORT TO THE PRIME MINISTER BY THE AUSTRALIAN SCIENCE AND TECHNOLOGY COUNCIL AGPS, CANBERRA, 1983

Summary and Recommendations

1.1 In this report, ASTEC examines two factors, currently under discussion in government, which can contribute to innovation in Australian industry; the provision of venture capital, and budgetary assistance to research and development in industry (IR&D). These are two separate policy proposals. Each, however, is directed at the improvement of the technological base of Australian industry, which is regarded as important to the development of competitiveness in both domestic and international markets, in order to contribute to growth and employment.

1.2 There are other policies which can bear upon the rate and nature of industrial innovation. These include procurement policy, offsets policy and contracting out of government R&D. ASTEC considers these matters to be important but the present study has not yet considered these issues.

Venture Capital

1.3 An adequate supply of venture capital is widely regarded as necessary for the development of new, high technology, high growth enterprises. A number of reports to government have examined whether there is a venture capital gap in the Australian financial system and have made recommendations for the establishment of various types of institutions to stimulate the provision of venture capital.

1.4 The most recent analysis of the venture capital market in Australia, and the means by which it can be promoted, has been provided in a report of the Australian Academy of Technological Sciences entitled 'Developing High Technology Enterprises for Australia'. ASTEC considers the report to be the most comprehensive survey available of the need for venture capital in support of the development of new, high technology enterprises in Australia. The Council accepts the Committes's view that there is a need to develop a private sector venture capital market in Australia. Further, the Council supports the Committee's preference for tax incentives to stimulate the growth of private sector venture capital industries.

Recommendation 1

That the Government encourage the development of a private sector venture capital industry as a matter of urgency, following the broad outline suggested in the recent report of the Australian Academy of Technological Sciences. (paragraph 3.28).

1.5 The Academy of Technological Sciences Committee's recommendations have a long term focus. ASTEC believes there is a need for immediate initiatives to ensure the supply of venture capital to those who need it now. Two

proposals for the provisioin of venture capital in the public sector are under active consideration by the Government; amendments to the Industrial Research and Development Incentives Act (1976), to give the Incentives Board the power to invest in equity participation, through debentures, or by making loans, and a proposal to extend the powers of the Australian Industry Development Corporation (AIDC) to increase the Corporation's activities in the provision of venture capital. ASTEC believes there is a place for one public sector venture capital institution in the Australian financial market. It supports the proposal to extend the powers of th AIDC to fill this role.

Recommendation 2

a. That the Government develop a single venture capital institution in the public sector to provide equity and loan funds for new high technology enterprises;

b. That the role of the Australian Industry Development Corporation (AIDC) be extended to enable the development of its venture capital activities; and

c. That businesses financed though AIDC have the right to buy back their equity at a price reflecting the current value of the business when the principals of the business judge it appropriate to do so. (paragraph 3.32).

Budgetary Assistance for Industrial Research and Development

1.6 ASTEC is concerned that the level of IR&D performed in Australia as a proportion of Gross Domestic Product is low by comparison with that of many other OECD countries, and that IR&D expenditure has been declining in real terms for a number of years. The Council believes that the Government must institute policies to reverse this downward trend and to increase the level of IR&D expenditure.

1.7 ASTEC notes that there is a division of opinion as to whether the Australian Industrial Research and Development Incentives Scheme (the AIRDI Scheme) has contributed to increases in IR&D. ASTEC prposes that the AIRDI scheme be continued in its present form. ASTEC believes, however, that bold initiatives are needed to stimulate IR&D, to sustain a high level of innovation and to help make Australian industries competitive on the local and international markets. ASTEC recommends the introduction of taxation concessions as a new policy instrument; it proposes a premium of 50% on all IR&D expenditures.

Recommendation 3

a. That a taxation incentive scheme be introduced as a matter of urgency, as an incentive, in addition to the Australian Industrial Research and Development Incentives (AIRDI) Scheme's Project Grants, to stimulate the level of industrial research and development activity in Australian business;

b. That the AIRDI Project Grants Scheme be maintained, with the same maximum level of individual grant and the same percentage rate of grant as at present, and with the Minister having discretion to vary both the maximum level of grant and grant rate;

c. That business be free to choose one form of incentive or the other, acording to their own best interests; and

d. That with respect to taxation incentives for IR&D a single premium rate be set at 50%.

APPENDIX P

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16. Abstract

The 1983 Queensland Industrial Mobilization Course Syndicate 1 has collated recommendations from various sources on Defence Industrial Research and Development. The Syndicates limited deliberations indicate that it may be opportune to forge closer links between Defence and external Research and Development authorities such as the Australian Science and Technology Council and the Commonwealth Science and Industry Research Organization.

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