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Some Historical Comments and Background on TTCP

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of the NAMRAD Principals

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The purpose of this paper is to review the history of TTCP, to the extent that we have been able to recapture it, and to try to place it in perspective in terms of magnitude and scale of effort. Later during this meeting, another paper will deal with resulting accomplishments.

Early Developments

In November, 1957 following a meeting between the President of the United States and the Prime Minister of the United Kingdom a "Declaration of Common Purpose" was prepared to record the view that there should be close and fruitful collaboration of scientists and engineers in defence research and development.

In order to seek ways of putting this declaration into effect, a senior level meeting was convened on 3 December 1957 in the Pentagon between the U.S and the U.K to which Canada was invited. It was agreed that sub-committees would explore ways and means of cooperation in the following fields:

- (a) Nuclear materials
- (b) Nuclear warheads
- (c) Military propulsion and power reactors
- (d) Delivery systems
- (e) Biological, radiological and chemical warfare
- (f) Defence against ballistic missiles
- (g) Anti-submarine detection and defence
- (h) Aircraft and aero engines
- (i) Infrared research
- (j) Thermionic valve research

Although Canada was invited to participate in the work of all these areas except (a) and (b), it did not participate in (c) either, except to attend an initial meeting.

Development of the High Level Control Organization

The senior level meeting of 3 December 1957 did not establish any clear-cut organization for the control of matters relating to tripartite cooperation in Defence R&D. Initially, this control came from the Office of the Assistant Secretary for Research & Engineering in the US Defense Department but subsequently opinion developed that a suitable organizational structure might be headed by a re-activated Combined Policy Committee. This was a bilateral UK/US committee that operated during World War II and could be revived as a tripartite committee at ministerial

level. It was thought that this might be served by two Scientific Advisory Bodies, one in the atomic field and the other in non-atomic fields. These two bodies would control the activities of Technical Subgroups, to be formed to deal with each of the ten fields of activity noted above. Each Subgroup could in turn activate working panels as it found it necessary.

In order to provide impetus to tripartite cooperation and to ensure the creation of various Subgroups in the non-atomic field, an Ad Hoc committee consisting of Mr. Foote, the Assistant Secretary of Defense for Research and Engineering in the US., Sir Frederick Brundrett, Chairman of the Defence Research Policy Committee in the UK and Dr Zimmerman, Chairman of the Defence Research Board in Canada was recommended by the US.

This non-atomic committee was known as the Ad Hoc Committee for Military Research and Development Cooperation. When it met in Ottawa in January 1959, its name had been changed to the Sub-Committee on Non-Atomic Military Research and Development (NAMRAD). The minutes of this first meeting indicated that the Principals were assisted in the day-to-day execution of their NAMRAD responsibilities by their senior R&D representatives in Washington who were by then known as the Washington Deputies.

Subgroup G was the first Subgroup to actually undertake work. At the preliminary meetings in Washington on 3 - 5 December 1957 the group which considered field G - Undersea Warfare - recommended that, as there had already been close cooperation in the undersea warfare field, a tripartite working party should be set up in the near future to provide specific proposals for close cooperation among the three countries on research and development in that field.

This group met in Washington on 9 -13 December constituting themselves as the CA/UK/US Steering Committee on Undersea Warfare (title later changed to Technical Subgroup on Undersea Warfare when it continued its activities within TTCP). The Steering Committee drafted Terms of Reference and recommended a number of sub-divisions of Undersea Warfare where permanent-working panels should consider areas and methods of cooperation.

As with many new ventures, the beginnings were difficult and in April 1959 a Subgroup G initiative resulted in a paper outlining not only the advantages to be gained by technical cooperation in Research and Development but perhaps more important, a number of difficulties still to be faced. An extract from that paper reads as follows:

"During the fifteen months that the Subgroups have been in existence, a number of practical difficulties have arisen which must be overcome if the full benefits of co-partnership are to be realized. These are: -

- (a) There is some reluctance to take into service items which have been developed in other countries when this means abandoning national development which has already started.
- (b) Cooperation, if it is to be effective, requires that the best experts should meet together and should follow up the recommendations resulting from the meetings, but these men are often already heavily engaged on national projects. There is therefore a tendency to avoid recommendations which involve heavy demands on time, even though they might well produce major advantages.
- (c) National security systems can be - and have proved to be - a great handicap to close collaboration. A need has been established for greater flexibility in clearing requests for

visits and the release of documents. Tardiness in granting clearance or in circulating information is almost as crippling to the success of cooperation as refusal to cooperate.

(d) Firms of all countries are reluctant to release detailed information to firms in other countries unless some commercial agreement is arranged. How patent and proprietary rights are to be protected in the context of full collaboration is a serious problem. Unless there is a complete link at firm-to-firm level for each weapon considered for cooperative action, and a readiness to make available expertise which is in the possession of industry, the opportunity for valuable work will be sterilized.

(e) It is important that officers selected as Subgroup and Working Panel members should have a sound background knowledge of their subject and be in touch at working level with their own national policy in their particular subject. Continuity should be preserved by selecting officers likely to serve on particular Subgroup or Working Panel for a worthwhile period of time and by ensuring a proper turnover to equally suitable successors.

(f) Interdependence demands frequent consultation and consequently a considerable amount of travel. While "sightseeing" on an interdependence ticket should not be condoned, it is important that participating countries should adopt a realistic approach to the problem ensuring that the necessary budgetary arrangements are made.

Unless all three countries are prepared to remove the barriers to cooperative action which have been found to exist, the high hopes fostered by President Eisenhower and Mr. MacMillan in putting into practice the principle of interdependence will not be realized in the field of defence research and development. Already the time of senior scientific staff has been mortgaged to the meetings of Subgroups at the expense of their contribution to national programs. None of the three countries could afford to continue to sustain this effort for a program which did not produce adequate results.

The time for testing and appraising the Subgroup system should now be over. Proposals for cooperative action are needed. They will not materialize unless all resolve to lay bare their general thinking on the problems they are meeting. Those present at the Supervisory Committee meeting held in Ottawa have already emphasized the desirability of encouraging the Subgroup and Panel members in making bold, imaginative recommendations without being stifled by divergent opinions, local difficulties or domestic policies. It is now the responsibility of those at all levels who are concerned with implementing the Declaration of Common Purpose to review the contribution they have so far made, and to tackle the difficulties that remain."

It is evident that traces of these problems still exist in TTCP and that we must be persistent in our drive to overcome them, but our operational success over the years indicates that in large measure, these difficulties have not proved to be as strong an impediment to collaboration as originally feared by Subgroup G.

The US, UK and Canada were joined by Australia in July 1965 and, since TTCP was no longer a "Tripartite" program, the name was changed to "The Technical Cooperation Program" and the acronym remained the same. New Zealand joined in October 1970 and today TTCP remains a five-nation program.

By October 1959 TTCP had grown to eleven (11) Subgroups and by 1971 it comprised seventeen (17) Subgroups which oversaw a total of fifty-seven (57) Panels and forty-three (43) Working Groups. The Panels covered specialty fields encompassed by the Terms of Reference of

the Subgroups. The Working Groups were sub-divisions of Panels which derived their membership from the Panels and which performed specific tasks for the Panels. The seventeen Subgroups were:

- Subgroup D - Guided Missiles
- Subgroup E - Chemical & Biological Defense
- Subgroup F - Defense Against Ballistic Missiles
- Subgroup G - Undersea Warfare
- Subgroup H - Aircraft & Aero Engines
- Subgroup I - Electron Devices
- Subgroup J - Infrared
- Subgroup K - Radar Techniques
- Subgroup M - Military Space Research
- Subgroup N - Nuclear Weapon Effects
- Subgroup O - Ordnance
- Subgroup P - Materials
- Subgroup Q - Electronic Warfare
- Subgroup R - Counterinsurgency Research
- Subgroup S - Communication Techniques
- Subgroup T - Ground Mobility
- Subgroup U - Biological Behavioural & Social Sciences

Subgroup L on Electronic Parts had been subsumed in Subgroup I in 1963; Subgroups P and Q had been added in 1960 and Subgroups R, S, T and U in 1965, 1966, 1967 and 1968, respectively.

Because of the conviction that TTCP had grown too large and that it encompassed too many activities of a marginal nature, the Washington Deputies were asked late in 1971 to re-examine the scope, structure, and mode of operation of TTCP. In a series of negotiating sessions continuing from November 1971 through March 1972, the Deputies agreed upon a policy which was approved by the NAMRAD Principals and promulgated in March 1972. This policy reduced the number of Subgroups from seventeen (17) to eight (8), and made organizational changes designed to ensure that the manpower, travel funds, and other resources expended by the member countries on TTCP would be limited to areas of highest priority and mutual interest. Two suspended Subgroups (E and U) were subsequently re-instated under revised tasking and modes of operation. This resulted in a total of ten (10) Subgroups under the new structure. Technology Liaison Groups (TLGs) were established in order to maintain lines of communication in important specific areas not under the cognizance of any Subgroup. Additionally, provisions were made for the establishment of Ad Hoc Study Groups (AHSGs) to conduct in depth studies of very specific technical problems. The AHSGs report directly to the Washington Deputies.

The revised Subgroup structure, which showed some re-titling to reflect change of emphasis and the progress of technology, was as follows:

- Subgroup E - Chemical Defense
- Subgroup G - Undersea Warfare
- Subgroup H - Aeronautics Technology
- Subgroup J - Infrared
- Subgroup K - Radar Technology

Subgroup P - Materials Technology
Subgroup Q - Electronic Warfare
Subgroup S - Communication Technology
Subgroup U - Behavioural Sciences
Subgroup W - Conventional Weapons Technology

The following structural changes had been made:

- (a) Subgroups F, M and T were abolished, with "Space Communications Technology" being subsumed in Subgroup S;
- (b) Subgroup D and O were amalgamated into the new Subgroup W, Conventional Weapons Technology;
- (c) "Biological Defense" aspects of old Subgroup E were transformed into Technology Liaison Group (TLG-1);
- (d) Counterinsurgency Research (old Subgroup R) was transformed into TLG-2 and renamed "Low Intensity Conflict";
- (e) Subgroup N was transformed into TLG-3;
- (f) Subgroup I was transformed into TLG-4

The new policy for TTCP placed the emphasis on collaborative activities in the technology base. While maintaining provisions for general information exchange, the policy precluded the formation of Subgroups solely for this purpose. Subgroups would be established only in areas where a high probability existed for substantially influencing the national programs of the participating countries. The policy made provision for closer liaison between the individual Subgroups and the Washington Deputies. Each Washington Deputy was assigned a Cognizant Deputy for several Subgroups for which was tasked to provide management advice and to act as an interface between those Subgroups and the Washington Deputies as a body.

The complement of Subgroups has remained unchanged since the 1972 revision but there have been substantial changes in individual Subgroup composition since that time to reflect the changing technology issues of importance to participating Nations, and there have been several changes in TLGs. TLG-1 has become a TP of Subgroup E, TLG-2 has been disbanded and TLG-5 was formed to establish and maintain information exchange on Trusted Software Technology.

The work of TTCP has been aided by the following successful Ad Hoc Study Groups over the years:

AHSG-101 was formed in 1972 to study the Application of Information. It completed its work in 1973.

AHSG-102 was formed in 1973 to survey the state of art in Tracking Low Altitude Targets of Military Interest and completed its work in 1977.

AHSG-103 was formed in 1980 to deal with Electronic Materials. It completed its work in 1982 and has recently been disbanded. Its recommendations are under consideration with respect to the possible formation of a new Subgroup which you will hear discussed later during the week.

AHSG-104 was formed in 1979 to deal with an area of joint interest to Subgroup J and K, namely, "The Detection of Missiles and Aircraft by Combined Sensor Techniques". It completed its work in 1981.

AHSG-105 was formed in 1982 to deal with the Chemical Survivability of Materials. It is the only AHSG currently in existence. Its final report is due by the end of this year.

At this point in our history, as you have already learned, the importance of both the hardware and software aspects of electronics technology has come to the fore and there is now active consideration being given to the formation of a new Subgroup to encompass those disciplines.

In closing, let me provide a few statistics which may be of interest. The work of TTCP has been overseen by eight US, seven UK, five Canadian, four Australian, and three New Zealand Principals during the course of its life. A complete listing of those Principals is shown at Annex 1. TTCP currently has ten (10) Subgroups, forty (40) Technical Panels, nineteen (19) Action Groups, three (3) Technology Liaison Groups and one (1) Ad Hoc Study Group. These involve some 1000 Scientists and Engineers on a part-time basis. In 1982, TTCP activities involved an exchange of nearly 2000 documents each of which is of specific, rather than of general, interest; an exchange of computer programs and materials numbering eighty-eight (88), pursuit of 100 cooperative activities and exchange of scientific personnel numbering sixty-four (64). The US Principal has already mentioned some of the results achieved in 1982. Later you will hear a more comprehensive perspective of accomplishments covering our first twenty-five years.

Washington DC
October 1983

ANNEX I
TTCP NAMRAD PRINCIPALS 1958-1983

Australia	Sir Leslie Martin Mr. H. Arthur Wills Dr. J. L. Farrands Prof. P. T. Fink
Canada	Dr. A. H. Zimmerman Dr. R. J. Uffen Dr. L. J. L'Heureux Mr. E. J. Bobyn Dr. D. Schofield
New Zealand	Dr. E. I. Robertson Dr. D. Kear Dr. D. J. Barnes
United Kingdom	Sir Frederick Brundrett Sir Solly Zuckerman Sir William Cook Sir Herman Bondi Sir Ronald Mason Sir John Charnley Mr. C. Fielding
United States	Dr. Herbert York Dr. Harold Brown Dr. John S. Foster, Jr. Dr. Malcolm R. Currie Dr. Wm. Perry Dr. R. M. Davis Dr. A. L. Bement, Jr. Dr. E. Martin