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With what priority should ORF be considered as a supplier of R & D services to federal government agencies?

THE PROBLEM

ORF has failed to communicate its structure and its function to federal government authorities. Since the introduction of the "Make or Buy" policy guidelines in 1973, this failure has led to severe government restrictions on ORF's ability to serve industry and government. ORF has been classified by DSS and other federal government departments as "non-industry", and consequently ineligible for federally-sponsored R & D contracts under the "Make or Buy" guidelines.

ORF's current "ineligible" status is inconsistent with the philosophies of "Make or Buy". Unlike other non-profit R & D organizations, such as universities and research councils in other provinces, ORF's primary function is the transfer and development of technology for the stimulation and benefit of Canadian industry.

Federally sponsored R & D programmes are an important source of the expertise with which ORF performs this service to hundreds of companies, large and small, operating in many industrial disciplines.

ORF'S ROLE

The Ontario Research Foundation is Canada's most comprehensive resource for contract research and development. An independent industrial research organization, ORF is governed by prominent businessmen and scientists. Its capital funds have been subscribed by Canadian manufacturers and the Province of Ontario.

One of ORF's principal objectives is to stimulate and enhance the vitality of this country's industrial community by providing innovative R & D capabilities and comprehensive technological services to those medium and small companies that are not large enough to have their own R & D facilities, and by offering technological specialization to larger companies to complement their own in-house resources.

The value of these activities to the industrial community is recognized by the Province of Ontario, which provides a performance grant based on the degree to which ORF services are utilized by Canadian industry. This appropriation is to finance internal backup research projects and the development of new skills, so that ORF's technical capabilities remain relevant to the increasingly complex requirements of industry.

Another prime role of ORF is to undertake, on request, R & D work for government in both the resource and industrial areas. It also assumes a responsibility of bringing research opportunities which promise social, as well as economic benefits, to the attention of government and industry.

ORF was founded in 1928 through the joint efforts of The Canadian Manufacturers' Association and the Ontario Government. Since then, ORF has provided thousands of companies - from the very small to the very large - with technical services. These have ranged from short term investigations and feasibility studies, through product and process development, to long-range scientific and engineering programs.

FACTS ABOUT ORF'S INDUSTRIAL ORIENTATION

1. FOUNDATION: ORF was established in 1928 on the initiative of Canadian industry. Representatives of the Canadian Manufacturers' Association, who raised the initial funds for ORF, proposed to the Province of Ontario that their industrial contributions be matched by equal funding from the Province. The Province agreed to this proposal, and until 1966 ORF operated on capital cash contributions of \$1,682,000 from industry and \$1,682,000 from government.

2. REFINANCING: In 1966/1967, ORF moved from cramped and outmoded laboratories on the University of Toronto campus to its current headquarters in the Sheridan Park Research Community. This acquisition of property and buildings, costing over \$8 million, was financed by further contributions from industry and by the sale of ORF investments and property, supplemented by a \$3.6 million capital contribution from the Province of Ontario.

3. MANAGEMENT: The ORF Board of Governors is comprised of prominent businessmen and scientists, so that its operations remain relevant to the needs of industry. ORF is an industrially-oriented research and development organization, whose management is independent of government.

4. OPERATING EXPENSES: Funds for ORF's contract R & D services to industry, government and individuals are provided entirely by contract revenues. All R & D and laboratory service contracts with industry and government are billed at full cost for work done.

Supplementary backup research programmes are financed by a performance grant from the Province of Ontario, which is based on contract income earned from Canadian industry in prior years. These more basic R & D activities are directed towards the development of more advanced technologies in industrial areas having the greatest need for ORF contract services.

This provincial appropriation, totalling about \$2 million for 1973, has been allocated to about 125 specific internal projects, which are designed to enhance ORF's technical capabilities to serve industry in future years. This appropriation is not payable in respect to ORF revenue from government contracts, and

is not used to subsidize any contract work for industrial companies or government agencies.

As a non-profit industrial service organization, ORF is not eligible for other forms of subsidy, such as PAIT or IRDIA.

5. ORIGIN OF CONTRACT INCOME - 1973: ORF's income from contracts and service work equalled \$4,115,000 in 1973, an increase of 16% over 1972.

Of the above total, over 65% came from Canadian industry. Less than 35% came from various government sources and foreign companies.

Contract income from Canadian industry increased by 30% over 1972, while contract income from government and foreign sources decreased by over 7% in the same period. (In the first four months of 1974, federal government contract revenue was 31% below the first four months of 1973.)

ORF's Canadian industrial income for 1973 came from a total of 936 companies, distributed throughout this nation's industrial economy as shown on the table on the next page.

Only 10% of this industrial income arose from companies listed by the FINANCIAL POST as "Canada's 100 largest", illustrating the very great extent to which the demand for ORF services arises from medium and small firms.

PERCENTAGE BREAKDOWN OF ORF'S 1973 CLIENTS BY INDUSTRY

	<u>SIC Code</u>	<u>% of ORF 1973 Clients</u>
AGRICULTURE, FORESTRY, FISHERIES	01/09	*
MINING	10-14	2
CONSTRUCTION	15-17	2
MANUFACTURING - FOOD, TOBACCO	20/21	1
- TEXTILES, LEATHER	22/23/31	9
- WOOD PRODUCTS/FURNITURE	24/25	3
- PAPER AND PRINTING	26/27	4
- CHEMICALS, PETROLEUM	28/29/30	14
- STONE, CLAY, GLASS, CONCRETE	32	4
- PRIMARY METALS	33	5
- FABRICATED METALS	34	10
- MACHINERY	35	9
- ELECTRICAL, ELECTRONICS	36	5
- TRANSPORTATION	37	4
- INSTRUMENTS, PHOTO, MEDICAL	38	2
- MISC. MANUFACTURING	39	2
TRANSPORTATION, COMMUNICATIONS, UTILITIES	40-49	2
WHOLESALE TRADE	50/51	6
RETAIL TRADE	52-59	2
FINANCE, INSURANCE, REAL ESTATE	60-67	2
SERVICES, ETC.	70-89	12
		<hr/>
		100
		<hr/>

*Less than 1%

6. RANGE OF JOB SIZES: An examination of the table below indicates that the activities of ORF respond to a widely differing industrial demand. It is quite impressive that ORF performed 2636 jobs for amounts of less than \$1000 each. This indicates that ORF is meeting effectively the day-to-day technological needs of industry, including the less complex needs of small companies which normally require testing and product evaluation services rather than research.

Short term work, consisting of jobs completed for less than \$5000 each has grown rapidly from 2195 jobs in 1971 to 2815 this year. At the other extreme, 41% of ORF's industrial income arose from 16 jobs in excess of \$30,000 each, indicating ORF's underlying competence in longer term sophisticated R & D activities.

Analysis of Income from Canadian Industry - 1973

<u>Range \$ Value of Jobs</u>	<u>No. of Jobs</u>	<u>% of Total Jobs</u>	<u>Dollar Amount of Jobs</u>	<u>% of Total Dollars</u>
0 - 1,000	2,636	91	393,000	15
1,000 - 5,000	179	6	396,000	15
5,000 - 10,000	50	2	374,000	14
10,000 - 30,000	23	1	421,000	16
30,000+	16	0.5	1,109,000	41
Total	2,904	100	\$2,693,000	100

ECONOMIC BENEFITS ARISING FROM ORF RESEARCH CONTRACTS

For many major projects, it is possible to measure the economic benefits that Canada has derived from ORF services to industry.

In 1972, Urwick Currie & Partners Ltd. completed a study of the economic results arising from ORF research contracts in prior years.

Urwick Currie selected ten representative projects executed between 1960 and 1970, for detailed examination. They obtained data from clients to determine the tax payback on their R & D investment at ORF.

These ten projects, costing \$370,000, resulted in paybacks over periods varying from one year to seven years. The paybacks to clients generated a cumulative tax flow to all levels of government of \$4,275,500 as at the end of 1970.

This sample of ten cases costing \$370,000 had been selected as a representative cross section of sixty cases valued at \$4,029,179, which had been identified as having already yielded economic benefits. (Among the projects not studied was one which by itself would have generated more tax flow than the ten under study.)

This Urwick Currie study concluded that "the magnitude of tax payback attributable to all such projects in which the Foundation has been involved could be several times the \$4,275,500 identified in the projects documented in the study. In addition, during the review certain non-economic benefits were identified that serve to enhance the Foundation's contribution".

ORF AS A PRIME R & D SUPPLIER TO INDUSTRY AND GOVERNMENT

The introductory statements to the "Make or Buy" policy guidelines, issued by the Treasury Board in January 1973, summarize the philosophy of "Make or Buy" as follows:

"Research and development is frequently cited as an important link in the innovation chain, which in industry may lead to economic growth through new or improved products, processes, services, etc. If little of a nation's R & D takes place in industry, there is bound to be little exploitation of the results of such R & D in industry with the serious risk of reduced competitiveness in the future in domestic and world markets. The anticipated result of the (Make or Buy) policy will be that Canadian industry, by becoming increasingly aware of the R & D requirements of government, will satisfy more of these requirements and thereby produce increased benefits for Canada through greater stimulation of the innovation process."

ORF's very existence reflects the concerns expressed in this policy.

ORF's financial and management structure is intentionally industry-oriented. The result has been that ORF's contract revenues have been derived primarily from industry, with 936 Canadian companies contributing nearly 2/3 of ORF's contract income last year.

ORF's "not-for-profit" status reflects its primary mission of service to Canadian industry. This status is appropriate for an organization which is funded in large part by Canadian industry, and is governed primarily by Canadian industrialists.

Another prime role of ORF is to serve government, in both the resource and industrial sectors of our economy. The federal government is the largest purchaser of R & D services in Canada, and for many years ORF has relied heavily on longer term federal R & D contracts as a source of relevant technological skills that find further exploitation in service to industry.

RANKING OF ORF AMONGST OTHER R & D PERFORMERS

The following tabular comparison of other performers against ORF suggests some of the reasons why ORF has become Canada's most comprehensive resource for industrial contract R & D. This comparison also clarifies the rationale for ORF receiving priority consideration in the execution of contract R & D under Canada's new "Make or Buy" policy:

<u>Alternate type of R&D supplier</u>	<u>Salient differences vs. ORF re "Make or Buy" philosophy</u>
1. Canadian controlled manufacturing companies with R & D capability	Alternate supplier is more capable of exploiting acquired technology to its own advantage. ORF may have higher or more relevant technical competence, and can apply acquired technology in its work with <u>many</u> companies, and <u>many</u> industries.
2. Foreign controlled manufacturing companies with R & D capability	Above comparison applies, but this type of supplier is much more capable of <u>exporting</u> acquired technology (and also of <u>importing</u> technology from offshore).
3. Manufacturing companies <u>without</u> R & D capabilities	<u>These companies, comprising the bulk of Canadian industry, cannot possibly benefit from the Make or Buy policy, except through outside contract R & D organizations such as ORF.</u> ORF has acted as the R & D department for thousands of companies who could not justify their own in-house laboratories.
4. Private consulting companies and individuals <u>without</u> manufacturing facilities	May or may not have expertise comparable to ORF. Can apply or transfer acquired technology on a much shorter client list, in fewer industries than ORF.
5. Industrial Research Institutes jointly operated by groupings of Canadian companies	Funded by membership dues, contract revenue and government grants. PPRIC is an example of this category, which operates in labs provided by government and university. Conducts R & D

<u>Alternate type of R&D supplier</u>	<u>Salient differences vs. ORF re "Make or Buy" philosophy</u>
6. Research councils in other provinces	for benefit of industry as a whole, but avoids projects which could bring competitive advantage to one member company. Now a preferred supplier under "Make or Buy". <u>None</u> is as industrially-oriented as ORF in either structure or in revenue source. B.C. Research comes closest to ORF in orientation towards Canadian industry, with 38% of its 1973 contract income from Canadian industrial sources, compared with over 65% for ORF.
7. Universities	Primary role is education, rather than technological services to industry.
8. Industrial Research Institutes at Universities	Act as an administrative grouping of professors to permit them to do consulting work, hopefully in industrial areas. Primary role of these professors is education.

CONCLUSIONS

ORF markets its services by aggressively seeking industrial applications for expertise which has been developed internally or acquired through government sponsored projects. If the likelihood of exploitation of technology to the benefit of Canadian industry were the only consideration in selecting suppliers for government R & D projects, it should be recognized that ORF is performing this role for a very broad base of industrial companies ... not only to satisfy each company's technical needs, but also to satisfy ORF's own marketing and survival needs.

When technological expertise, and the likelihood of technology transfer into many sectors of our economy are also taken into account, ORF merits very serious consideration as a prime supplier for the majority of contracts listed in the DSS monthly bulletins.

APPENDIX

WHAT IS ORF'S POSITION RE COMPETITION
WITH PROFIT-MAKING ORGANIZATIONS?

The next four pages, taken from ORF's Standard Practice Manual, explain ORF's stance re competition with industry (which is also ORF's major sponsor). This policy is supported by ORF's Board of Governors, comprising prominent representatives of industry and the scientific community.

It would be quite appropriate for DSS when inviting ORF to bid on any scientific project, to request that ORF refrain from bidding unless it can demonstrate in its proposal that its status as a competitor on that project is not inconsistent with the attached policy.

MINISTRY OF STATE
MINISTÈRE D'ÉTAT
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SCIENCE AND TECHNOLOGY
SCIENCES ET TECHNOLOGIE

ONTARIO RESEARCH FOUNDATION
STANDARD PRACTICE MANUAL

Subject: Policy Statement Regarding Competition with
Privately Owned Organizations

No. DM-ADM-13

Date: April 10, 1974

From time to time some private firms have expressed concern that the Foundation presents unfair competition to them in their efforts to provide a service to industry or to government. In general, their concern is based on the erroneous supposition that the Foundation uses government funds to subsidize the work we do for our clients. Their concern generally has disappeared when the policies of the Foundation are understood. However, in a few cases, while they acknowledge that the Foundation charges cover all costs, including overhead and depreciation, they maintain that, as an organization enjoying public support in part, we should not compete in any way with organizations in the private sector. Organizations who have expressed concern one time or another include The Association of Consulting Engineers of Canada, The Association of Management Consultants, the Canadian Testing Association, various engineering firms, testing laboratories and consultants. The Foundation has attempted to maintain a very broad capacity in research and development and it is only with respect to a narrow sector of these activities that there is any conflict with private firms.

Statements of Policy

1. As a matter of general policy, the Foundation does not wish to compete with any privately owned organization. On the other hand, the Foundation was established by financial contributions from industry and government to provide research, development and other technical services to industry and therefore has an obligation to provide these services to firms requesting them. Where a privately owned organization provides a technical service similar to one offered by ORF, it is extremely difficult to reconcile both viewpoints mentioned above in a manner acceptable to the private firm, the Foundation and the client. This is particularly true when the private firm is a newcomer to a field long serviced by the Foundation.

The Foundation is always prepared to review any complaint of "unfair competition" with the complainant in a sympathetic manner with the objective of determining whether there is in fact an unfair competitive aspect to our operation and, secondly, with the objective of resolving differences of viewpoint and arriving at an acceptable compromise, if this is at all possible. The Foundation exists in and serves a private property, free enterprise, competitive, economic system. The very nature of the Foundation's contract activities will inevitably place it at times in the competitive environment

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of this economic system. When this occurs the Foundation must and does accept the obligation to ensure that it does not use funds received from the Government of Ontario as a means of providing itself with an unfair price advantage over any competing privately owned firm.

2. It has been and will continue to be the policy of the Foundation not to use government funds to subsidize contract or service work undertaken for any client. Non-contract income from the Government of Ontario is used for in-house R & D programs designed to maintain the scientific competence of the staff and to develop expertise and opportunities in new areas of applied science and technology.

3. The pricing policy of the Foundation is a matter of public record and the Foundation will provide details of the pricing policy currently being followed to any inquirer with a legitimate interest.

In this regard, the Foundation does not normally undertake a job on a fixed price basis but charges the client for the time involved at a pre-determined rate. Rates are a function of the payroll costs. At the present time the rate for jobs in excess of \$3,000 is "payroll costs x 2.15"; for jobs less than \$3,000 the rate is "payroll costs x 2.50". In those cases where the Foundation has established fixed prices for specific standard tests, ORF is quite willing to make these fixed test prices public. Fixed prices for standard laboratory tests are normally based on at least "payroll costs x 2.50".

4. The Foundation will maintain a fee or rate structure that exceeds the minimums recommended by any relevant professional organization, such as The Association of Professional Engineers of the Province of Ontario.

The scale of fees for consulting engineering services as recommended by the APEO (January 1, 1970) is,-

- (a) Principals and Executive Engineers - not less than \$250 per normal working day (revised January 1973).

Note: Consulting rates for all Research Scientists and Engineers and all higher staff categories (i.e. about 75% of our professional staff) exceed \$250 per day.

ONTARIO RESEARCH FOUNDATION
STANDARD PRACTICE MANUAL

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(b) Staff Time - payroll costs multiplied by a factor of not less than 2.0.

Note: The Foundation's practice of charging payroll costs x 2.15 is higher than the above mentioned rate. In this regard it should be noted that certain items in our charging method, for example the 2-20% of payroll cost for instrument maintenance, are, in a sense, additional overhead charges, so that the 2.15 rate above can quite properly be considered as 2.17 - 2.35 depending on the type of work performed.

5. The Foundation will raise its rates to be on at least a par with private organizations when it is established that our prices are below those in general use by privately owned firms and other competing organizations.

ORF's internal confidential report, "A Brief Survey of Contract Research Organizations", carried out in 1971 indicates that ORF's charges were the third highest of the 10 contract research organizations surveyed, which included Stanford Research Institute and three other large American organizations. Charges for 1,000 hours of a \$10,000 per year scientist were as follows,-

Organization A	\$17,143	Organization E	\$12,832
" B	14,764	" F	12,727
ORF	14,244	" G	12,620
Organization C	13,454	" H	11,019
" D	13,327	" I	N/A

It should be noted that ORF rates have been increased slightly since then.

The Foundation and the private firms find themselves competing with the universities, individual professors or groups of professors as consultants, and with the Industrial Research Institutes established by the Department of Industry, Trade and Commerce. Some members of this group may, at times, provide professional services with little or no overhead charge. They can do so because it is not always necessary for them to pay overhead charges which, of course, are unavoidable costs to ORF and private firms. While the Foundation has no intent to use this group as examples of low competitive prices or otherwise to justify its operations, nevertheless it is felt their existence and practices further complicate the Foundation's position.

ONTARIO RESEARCH FOUNDATION
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6. The Foundation has an obligation to industry generally and government, and to its subscribers and founders (who are industrial firms) to provide research, development and other technological services. To withdraw such services at the first suggestion of unfair or improper competition would not, in the opinion of the Foundation, be fulfilling its obligation to its founders. The same obligation would require the Foundation NOT to withdraw any service in the field of research and development since this is the main purpose of the Foundation and to circumscribe its activities in any way in this broad field is to circumscribe its effectiveness as an R & D organization.

In the past when private organizations have continuously offered a satisfactory service for a considerable number of years, the Foundation has, at times, withdrawn its offer of services in the field. In the interests of the users of the service it would seem that the Foundation should not withdraw until the users have indicated to the Foundation that alternate sources of service are technically and commercially satisfactory, that there are a number of firms offering the service and that they have done so for a number of years. In other words, the Foundation should not consider withdrawing from a field unless an established record of satisfactory performance has been demonstrated by the private organizations. Withdrawal of services, as indicated above, can only refer to services that are peripheral to our R & D activities; in this context service laboratories essential to these R & D activities cannot be considered to be peripheral services.

7. The Foundation will at all times make its services fully available to private firms that offer similar or related services so that the private firm can offer a more comprehensive service to its clientele. In the past, the Foundation has frequently co-operated both with commercial testing laboratories and with engineering consulting firms so as to allow them to present a proposal with the Foundation performing, as sub-contractor, those services beyond the scope or the capacity of the privately owned firm. The Foundation will cooperate in the fullest extent possible in this manner. The Foundation feels that this practice has secured work for the private firms that they might not have received otherwise. It perhaps should also be noted that the Foundation itself uses the services of commercial testing laboratories and consulting firms and has also referred work to them.

