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Herzberg Institute
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Institut Herzberg
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Dominion Radio
Astrophysical Observatory

Observatoire fédéral de
radioastrophysique

File Référence

November 17, 1986

Dr. Alan H. Bridle
N.R.A.O.
Edgemont Road
Charlottesville, Virginia 22901
U.S.A.

Dear Alan:

Although the funding situation within NRC, and specifically HIA, has not yet clarified, I would like to take this opportunity to thank you for your support during the recent period of turmoil. We are extremely saddened by the apparent decline of resources for radio astronomy within NRC, as I am sure all astronomers are, and we join you all in desiring the preservation of a strong research community of radio astronomers in Canada. We are very grateful for the strong expressions of concern for DRAO that came from our university colleagues and friends in the astronomical and industrial communities. We hope that DRAO will emerge from the present difficulties as a stronger and re-envigorated institution that will continue to provide services to the university community that are technically competitive, scientifically significant, and user-friendly.

Yours sincerely,

L.A. Higgs,
Director

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File Référence

22 October 1986

Dr. Alan H. Bridle
National Radio Astronomy Observatory
Edgemont Road
Charlottesville, Virginia 22901

Dear Dr. Bridle,

Thank you for your excellent letter carefully arguing the case for maintaining Canadian capabilities in both single dish and aperture synthesis radio astronomy.

The NRC Associate Committee on Astronomy will be considering our options under the new constraints at a special meeting on October 24. Meanwhile, I shall send a copy of your letter to Dr. Clive Willis, the NRC Vice-President directly responsible for HIA.

Yours sincerely,

Donald C. Morton
Director

DCM:mjs

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Dr. A. H. BRIDLE
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October 15, 1986

Dr. D. C. Morton
Director, Herzberg Institute of Astrophysics
National Research Council of Canada
100 Sussex Drive
Ottawa K1A 0R6
CANADA

Dear Dr. Morton,

I am writing to you out of concern over news that is circulating here about the imminent possibility of substantial cuts to the NRC budget for astronomy, and the possible termination of some programs. Although I have been away from Canada for most of the last six years, I have had close contacts with the radio astronomers in Ottawa and in Penticton since 1965. I served on the CLBA Planning Committee and on the CAS/ACA Committee on Radio Astronomy for most of the period between 1979 and 1985. I remain very concerned about the long-term health of radio astronomy in Canada and what I have heard about the possibility of cuts to the H.I.A. budget prompts me to offer you some thoughts about priorities.

Radio astronomy has traditionally divided by instrumental technique into two major subdisciplines, "single dish" and "aperture synthesis", whose astrophysical capabilities, engineering and computing requirements are significantly different. Until the 1970s, both subdisciplines were well represented in both Ottawa and Penticton, but since then the Ottawa group has concentrated on single dish work and the Penticton group on synthesis. This parallels the evolution of NRAO, where Green Bank and Tucson concentrate on single dish work and Socorro on synthesis. The astrophysical problems that are best addressed by single dish methods and by aperture synthesis form complementary, interlocking research areas. It is important that both areas continue to be pursued effectively if the total discipline of radio astronomy is to remain healthy in Canada.

It is a most logical outgrowth from the earlier work in Ottawa for that group to move the single dish effort to the millimeter regime where interesting problems of interstellar chemistry and galactic structure abound. Whether by refurbishing the A.R.O. 46-meter antenna as a stand-alone instrument, or by international collaboration, the expertise of this group should be applied to frontier problems in astrophysics at millimeter wavelengths. I imagine that few people would argue against this, so I will not belabor it.

I want instead to emphasise the need to support this migration of the single dish work to shorter wavelengths, under tight financial constraints, without emasculating the vigorous and highly competent effort at Penticton in aperture synthesis. I believe that there are at least three strong reasons for you to defend the program at Penticton against what I hope may be temporary financial exigencies, and will now enumerate them.

First, there is a need to maintain a balance between single dish and synthesis work in any country with a serious commitment to radio astronomy, as significant advances in astrophysics are still being made through both subdisciplines. It would be foolhardy for anyone to argue that one of these alone is the route to all future progress, and the Canadian base of expertise in both of them should be maintained if at all possible. The Penticton group has thrived under Lloyd Higgs' leadership, and is demonstrating that there is front-rank astrophysics to be done via wide field imaging at centimeter wavelengths, for which the D.R.A.O. facilities are unique in the world.

Second, D.R.A.O. has an excellent tradition of interaction with universities in Western Canada, especially in the areas of instrument design and engineering. These areas are vital to the education of the next generation of radio telescope builders in Canada; without them the subject will have no (indigenous) future there. Interactions such as these are also nurtured by proximity. This is also an argument for maintaining government observatories in both Eastern and Western Canada unless there are overwhelmingly strong reasons to do otherwise.

Third, the White Lake Basin is one of the more interference-free sites for radio astronomy in the world; we in the United States have recently come to appreciate the importance of such a resource as it has been hard to find radio-quiet sites, even in "remote" areas, for the new VLBA antennas. If such resources are not jealously guarded in all countries that now have them, the science of radio astronomy may one day become extinct.

The financial and personnel resources required to keep the Penticton program in the forefront of its field will be modest in relation to those deployed by N.R.C. in other fields of research. I therefore urge you to give high priority to supporting a robust program at Penticton. The loss or erosion of the present program would damage the future of Canadian astronomy out of all proportion to any short-term financial savings that might be effected.

If it should turn out that a stand-alone millimetric single-dish facility could not be supported by NRC without closing the observatory at Penticton, I would urge you to explore the possibilities for collaboration with other countries on millimeter antennas at high, dry sites. While the resurfacing project in its presently proposed form will also meet political goals of giving Canada more visibility in the single dish community, its scientific and technology-development goals might be met through international collaboration. I see the stand-alone aspect of the resurfacing project as desirable only if it can be achieved without serious damage to other important efforts within the H.I.A., such as that at Penticton.

I do not envy you in having to confront such issues so soon in your tenure as Director of the H.I.A., but offer you my best wishes for successful resolution of these problems, and for better times to come in the years ahead.

Yours sincerely,

Alan H. Bridle
Staff Scientist