US electron accelerator

Designers dispute over machine

Washington

WITH the recommendation by a government advisory panel earlier this year that the contract for a new electron accelerator be awarded to an inexperienced consortium of south-eastern universities, and with extraordinary efforts by the loser, Argonne National Laboratory, to have that recommendation overturned, feelings have been running high among high-energy physicists. So when a respected accelerator designer from Fermilab wrote to the Department of Energy (DoE) last month claiming that the winning design from the Southeastern Universities Research Association (SURA) could not work, the effect was explosive.

Accelerator designers now agree that solutions to save the design are readily available; still, the incident has revealed just how political the matter has become, and it may also have raised questions about the expertise of the physicists who drew up the design. The story began on 4 June, when Fred Mills of Fermilab wrote to James Leiss, head of DoE's high-energy and nuclear physics office, to say that in looking over the SURA design he had discovered what he described last week as "a rather serious error". The problem was that the designers had based their assumptions of the performance of the electrostatic septa — used to extract the electron beam from the accelerator ring — on performance in existing proton accelerators. Mills pointed out that in an electron machine, the wires in the septa are a cathode, and field emission of electrons occurs — not a problem in proton accelerators where the charge is of the opposite sign. The difference could mean that field strengths of only one-half the design value can be achieved in the electrostatic septa.

DoE officials and SURA scientists wasted no time in trying to dispose of the objection. And DoE officials and at least some members of the Nuclear Science Advisory Committee (NSAC), which endorsed the SURA design in April, remain extremely touchy about the subject. Leiss said he understood the matter to be a "private" one between himself and Mills and refused to provide copies of any of the correspondence. He insisted that the NSAC panel that evaluated the design proposals had already raised the matter with SURA and that the required modifications would if anything decrease the costs of the project.

Similarly, Alan Bromley of Yale University, who chaired the NSAC panel, labelled it a "non-issue" and "trivial", and suggested that Mills's comments may have been "shaded" by his having designed an alternative approach to beam extraction. Bromley also made light of the notion that the SURA designers could have overlooked the effect of the changed polarity in the septa. "Any damned idiot", he said, knows the difference berween positive and negative charges.

SURA scientists have been much more open about discussing the problem. James McCarthy of the University of Virginia said "there are 20 alternatives; we've chosen the simplest solution, which is to modify the magnetic septa downstream". By altering the position and strength of these components, they can live with the halved field strength of the electrostatic septa, he said. McCarthy, too, asserted that the problem had already been considered by SURA and the NSAC panel.

Yet no mention of the problem appears in the panel's report. And although the technical sub-panel was apparently concerned about attaining the design field strength, it is not clear whether it specifically addressed the problems arising from the reversed polarity.

Hermann Grunder of Lawrence Berkeley Laboratory, who chaired the technical sub-panel, admits that the SURA designers did indeed overlook the consequences of the reversed polarity, and that it should have been mentioned in the report. But, he said, it does not alter the overall conclusion that "SURA had the better and more attractive design and environment".

And Grunder stressed that it just did not make sense to single out the polarity problem as an isolated issue. Grunder said he is more concerned about other problems, mentioned in the report, such as the work on the klystron tubes. He added that the political infighting was merely increasing the chances that DoE will take the easy way out and "the whole electron facility may get canned".

The choice between SURA and Argonne is now in the hands of Energy Secretary Donald Hodel. Hodel last month met Senator Charles Percy (Republican, Illinois) and a delegation from his home state who came to press the case for Argonne. Hodel will hear the other side next week from the Virginia congressional delegation. If construction is to begin in fiscal year 1985, as planned, Hodel would probably need to make a decision shortly so that research and development funds could be allocated for fiscal year 1984, which begins on 1 October this year.

The SURA board's recent vote to keep Newport News, Virginia, as the proposed site for its accelerator, may — however marginally — tip the scales in Argonne's favour. The NSAC panel had suggested that SURA reconsider this decision, noting the remoteness of that location from a university campus or an international airport. SURA is apparently banking on the decreased costs that the Newport News site offers because of existing buildings that can be used. **Stephen Budiansky**

Malaria vaccine

Conflicting interests at work

Canberra

DELICATE negotiations are under way to settle how best to try to develop a malaria vaccine on the basis of the successful cloning of some of the parasite's genes by scientists at the Walter and Eliza Hall Institute of Medical Research in Melbourne, Australia (see *News and Views*, p.13). The problem is how to satisfy the demands of the biotechnology companies that will be involved while protecting the interests of those organizations that have supported the research, particularly the World Health Organization (WHO). The same problem confounded initial attempts to involve biotechnology companies in the development of another malaria vaccine based on research at New York University Medical Center (see *Nature* 7 April, p.473).

The Hall Institute's malaria research project is funded by grants from WHO, the National Health and Medical Research Council and from the Rockefeller Foundation's great neglected diseases programme. The small but significant contribution from WHO, which has contractual requirements for public access, may deter domestic biotechnology companies from bidding for development rights. Nevertheless, Dr Mitchell feels that WHO requirements are "not obstructive" and some negotiation is possible. The situation calls for ingenuity in drawing up contracts so as to safeguard the interests of all parties. A meeting next week between the scientists and industry — the Commonwealth Serum Laboratories and Biotechnology Australia — will work out details of a formula for development. The Hall Institute is particularly anxious to safeguard the interests of Papua New Guinea in assuring its access to vaccine as serum and parasite samples for the project were supplied by the Papua New Guinea Institute of Medical Research.

When announcing the success earlier this month, the director of the institute, Professor Sir Gustav Nossal, said that the development of the vaccine within Australia was a venture tailor-made for support by the recently revived National Biotechnology Program (see *Nature* 23 June, p.648). However, if the government decides to support the companies involved or guarantees to buy the vaccine, the costs are likely to be outside the budget of the National Biotechnology Program. The Department of Science and Technology may be loath to support a product not regarded as a commercial proposition. Whatever the outcome of the meeting next week, the Department of Science and Technology will look at all funding options, including referring the problem to the Department of Health. **Vimala Sarma**

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