U.S. PV manufacturers held more than 80% of the world market in 1980 but, as other nations developed their PV industries, the U.S. market share dropped to less than 50%. Due to poor research and market conditions in the United States, the leading PV manufacturing company, ARCO Solar, was recently sold by its parent oil company to a German investor. Just at a time when PV technology has advanced to a level where we can see that it is becoming cost competitive with conventional energy sources, the United States seems to be conceding the game to our international competitors.

Similar tales can be told of other renewable energy and conservation technologies. The United States has the opportunity to be a leader in the fight against global warming and atmospheric pollution and to gain economically from those efforts. To succeed, the federal government must reverse its policy of phasing out R&D and market support for energy conservation and renewable energy technologies.

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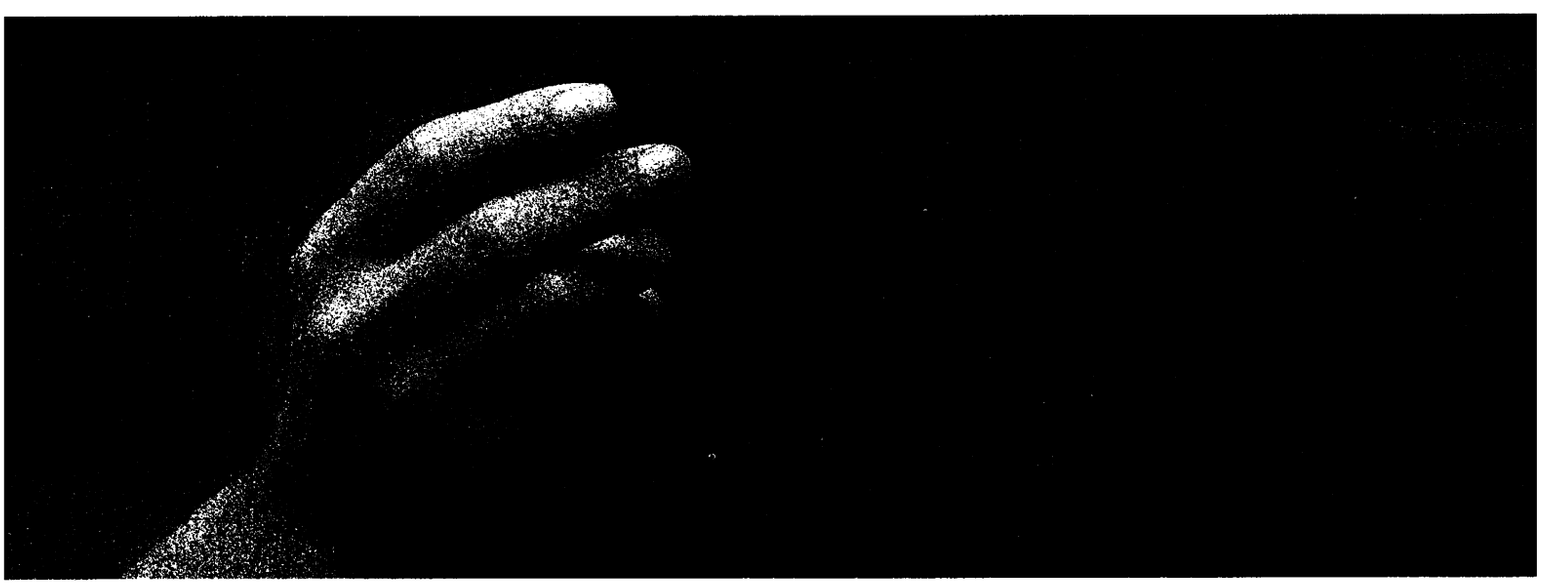
SSC Test Magnets

Mark Crawford's News & Comment article (25 Aug., p. 809) creates several misconceptions about the development of dipole magnets for the Superconducting Super Collider (SSC). Most serious is the implication that a report by an expert panel reviewing the magnet R&D program was somehow withheld from responsible officials. The fact is that at all stages, this review and its outcome have been discussed openly with Congress, the Department of Energy (DOE), and the scientific community.

In February 1989, I testified before both House and Senate subcommittees on energy research and development and reported on problems that had been seen in some SSC test magnets. At that time, I indicated my intention to appoint an SSC Collider Dipole Review Panel to study the magnet R&D program and to make recommendations to me. The panel was established, and I asked it to provide a rigorous, critical review of the program. The panel met in April 1989 and provided a draft report in May. That month, I presented the main conclusions at a meeting of DOE's High Energy Physics Advisory Panel in public session. When the report was completed in June, a preface was added and the report was issued as SSC Laboratory Report SSC-SR-1040. The report is available to anyone who requests a copy; it has never been "closely held."

Crawford's article also projects an excessively negative tone about the technical status of the magnet R&D program and the accomplishments of the national R&D effort that was led by the SSC Central Design Group. The tone is misleading. In fact, test magnets produced in the program verify the basic design concept. Nevertheless, when the panel was assembled, a number of issues remained for the magnet R&D program, among them the questions of operating margin, reliability, manufacturability, and reproducibility. These are the points that are emphasized in the review panel's report. They have long been recognized as critical and are basic to the next stage of the development program, which will involve major industrial participation in addition to national laboratory work.



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That there are problems and challenges in the development of the SSC dipole magnets comes as no surprise. Producing the dipole magnets is probably the single greatest technical challenge in building the collider. In any technically demanding program, the R&D phase is where problems are uncovered and solved. It would be unrealistic to expect every prototype to achieve all final design goals.

As part of our overall analysis and assessment of the SSC design, the Collider Dipole Review Panel produced a strong, critical report. The new SSC Laboratory is grateful for their fine effort. As their report shows, we do know how to build individual SSC magnets. The next step is to finish developing the methods for building all the magnets needed to achieve the great scientific promise of the SSC.

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Response: Key aides to the House and Senate appropriations committees and the House Science, Space, and Technology Committee told *Science* just before the publication of the article that they did not recall receiving copies of the magnet report. Schwitters says the report was available to anyone who requested it. That may have been the case, but the SSC Laboratory made little effort to see that it was widely circulated to Congress before legislators had to decide how to vote on measures to double SSC's $100-million budget and to start construction.

As for the magnets' operating margin, Department of Energy officials have previously maintained that an upper performance bound of 6.7 teslas at 4.35 K would be adequate. The report issued by the review panel was the first open acknowledgement that a higher operating field would be necessary, if the SSC is to operate as advertised.

—MARK CRAWFORD

Asian-American Students

I write with reference to two News & Comment articles about Asian-American students, one by Constance Holden (18 Aug., p. 694) and another by Robert Buderi (18 Aug., p. 694).

Neither article clearly distinguishes between native-born and U.S.–born Asians. National Research Council data analyzed by Betty Vetter (*1*) demonstrate a vast difference in earned U.S. science and engineering degrees between these groups of Asians. Educational research focusing on cultural (including family) influences on learning, notably the studies of Harold Stevenson (*2*), also supports the conclusion that there are significant differences between oriental students schooled and nurtured in their native cultures and oriental students born, nurtured, and schooled in the United States.

Understanding such differences is essential to consideration of the issues Holden and Buderi discuss. If research data on these differences are ignored by admissions officers, then our educational systems and our students will get the wrong message.

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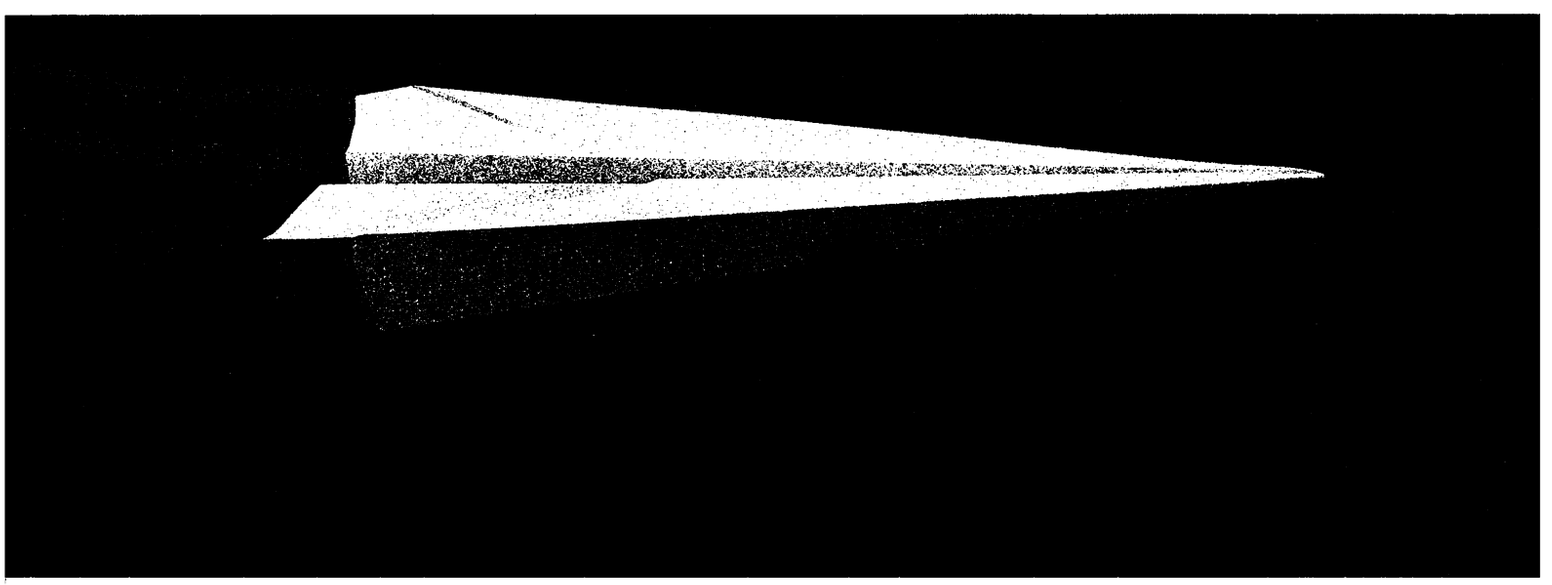

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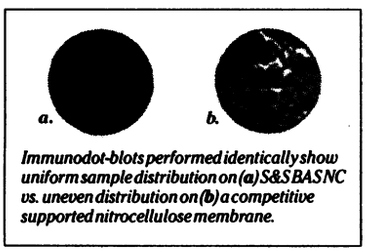

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