mendations on the service labs will now be reviewed by a separate group established by Congress, called the Advisory Commission on Laboratory Consolidation and Conversion. Peopled with civilian and military leaders, it is run by the Pentagon's chief technical officer, the (acting) director of defense research and engineering, Charles Adolph. This commission has been at work since last year and is due to make its own recommendations, which will be incorporated into the base closure commission's future recommendations, to the Pentagon by the end of September. Both Congress and the Administration have agreed to hold off making any final decisions on the Army and Navy lab changes proposed last week until they have had time to review this panel's ideas—sometime after 1 January 1992.

As for the rest of the base closure commission's proposals, the president must approve or reject the package within 2 weeks. If he approves, the cuts become final—that is, unless Congress objects within 45 days, which would then set the whole process back to square one. Congress hatched this complex scheme to carry out the necessary surgery while spreading the blame as widely as possible. The result is that while military leaders have made promises to bring about sweeping changes, everything remains tentative for now. But the government's budget problems are so severe that they're likely to keep the lab consolidation program moving ahead, however slow its pace. ■ ELIOT MARSHALL

A Tangle of Superconductor Patent Disputes

When products made from high-temperature superconductors finally find their way to market, who will earn royalties on the patent rights? That question just got considerably murkier. Rights to the Y-Ba-Cu-O compounds, one of the three families of high-temperature superconductors, have been mired in a formal patent dispute known as an interference since early 1989. Now the U.S. Patent and Trademark Office (PTO) has declared a second interference, this one regarding priority for the bismuth-based superconductors—materials with the general formula Bi-Sr-Ca-Cu-O, seen as strong candidates for the potentially huge market for superconducting electric cables and storage devices.

The PTO will now be starting an in-house trial to resolve priority. Any patent procedure can be cumbersome (see *Science*, 5 July, p. 20), and this one may be exceptionally so. No fewer than five parties are claiming priority for the bismuth compounds: Du Pont, the University of Houston, the New Zealand Department of Scientific and Industrial Research, Japan's National Research Institute for Metals (NRIM), and Germany's Hoechst.

It is not clear whether the dispute will slow commercialization of the bismuth-based compounds, which wire producers are focusing on because of their comparatively high current-carrying capacity. Several companies have already spun the compounds into experimental filaments tens of meters long. Parties to the dispute may decide to delay or withhold funds for further development until the dispute is settled, according to a patent attorney knowledgeable about the interference. But other companies working with the compounds are not likely to change their plans, according to Peter Loconto, president of Ceramic Process Systems Corp. in Milford, Massachusetts.

The patent office declares a new interference.

The interference caps a record of conflict that began with the first announcements of the bismuth compound, made in January 1988 by Hiroshi Maeda and his group at the NRIM. Paul Chu and his group at the University of Houston announced a parallel discovery just a few days later, and Du Pont filed a patent application in February, according to Edward Mead, then director of the company's superconductivity efforts. In April, though, Hoechst revealed that it had quietly filed for patent rights the previous November. Meanwhile, Jeff Tallon of the New Zealand group says he and his colleagues can establish their priority based on disclosures made in March 1988. Each group described superconducting compounds that contain bismuth in place of the rare-earth element yttrium and have two crystal phases that became superconducting at temperatures of 107 K and 85 K, respectively.

What happens next? To get things started in an interference proceeding, the PTO adopts the claim of one of the parties as a standard—what is known as the count. The count is meant to be a fair statement of the innovation, and according to the patent attorney it is "the rabbit the hounds chase." Each of the claimants tries to prove it was the first to conceive the invention described in the count. The patent office also names a senior party—the party whose claim the junior parties must best. In the bismuth interference the Maeda group holds this pole position.

Once the PTO adopts a count in the bismuth dispute, several of the claimants might find themselves out of the running, if their original patent applications differ from the count. In the Y-Ba-Cu-O interference, for example, a claim advanced by Chu and his colleagues fell by the wayside early on because the count—the claim of AT&T Bell Laboratories, the senior party—described a material with a single crystal phase, whereas the Chu group had described a multiphase compound in their earliest application. That left Bell Labs, IBM, and the Naval Research Laboratory slugging it out.

Each of the claimants surviving this early winnowing will then present evidence supporting its claim to priority. The rules of this phase of the process will give Du Pont and the University of Houston, the two U.S. contenders, a distinct advantage. Under the U.S. patent system, American companies can introduce a wide variety of new evidence—experimental results, laboratory notebooks, corroborating witnesses, and sworn affidavits—to prove their case. Foreign applicants, though, are barred from presenting any evidence other than what accompanied their original patent application in their own country, unless they communicated key information to a U.S. party.

After a series of courtroom procedures—motions, cross-examination, briefs, and oral arguments—the PTO renders a decision. And that resolution, which could be years in coming, may be only the beginning in the bismuth-superconductor dispute. Any party can appeal the decision through the federal court system. According to an official of Japan's Science and Technology Agency, of which the NRIM is part, the Japanese group is prepared to do just that if any part of their claim is rejected. ■ C. DAVID CHAFFEE

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