Early Planning for a European High Flux Reactor

Laurence Passell

Senior Scientist (retired)

Brookhaven National Laboratory

In 1961, partway through the first of the two years I spent at Research Establishment Risø in Denmark, Otto Kofoed-Hansen, the Chairman of Risø's Physics Department, called me into his office and asked me to represent the Laboratory at an upcoming meeting at Britain's Harwell Laboratory organized by Peter Egelstaff (then the leader of Harwell's neutron time-of-flight group). Its purpose, I discovered, was to generate interest in a European version of the high flux beam reactor that Brookhaven National Laboratory had announced it would soon be building. After a day spent reviewing the many ways in which such a reactor would benefit Western Europe's neutron-based research programs, it was proposed that Egelstaff form a Working Group with the objective of creating a prospectus for a European high flux reactor. Not surprisingly, the proposal received the unanimous approval of the attendees

Kofoed-Hansen's reaction when I told him what had transpired was emphatically positive. A strong believer in shared, state-of-the-art research facilities, he urged me to become part of the Working Group (which I did) and to keep him informed of its progress.

Through 1961, 1962 and the early months of 1963 I continued to serve as the Danish representative at the meetings of the Working Group. Our task was to identify the many and varied ways in which such a reactor would be used by Europe's research community and then put together a document outlining the specifications of the reactor, its beam lines and the associated facilities that would be needed for the many research programs it would support. My recollection is that seven countries were involved: France, Germany, the United Kingdom, Italy, Belgium, the Netherlands and Denmark. Of the seven, the representatives of the two countries with the largest commitments to neutron-based research, Peter Egelstaff of the United Kingdom and Heinz Maier-Leibnitz of West Germany, were the most influential and made the most important contributions to our discussions. Innovations with major impacts on neutron-based research were then under development in their countries; i.e. liquid hydrogen moderators (at Harwell) and neutron guides (at the Munich Technical University Reactor), and they stressed the importance of incorporating these newly emerging technologies into the design of the reactor and its peripheral facilities Those of us representing France, Italy and the smaller countries played lesser roles, that of the French representative being at least partly a consequence of the unfortunate requirement of the de Gaulle government that he be accompanied by an interpreter and speak only French at the meetings. It's also relevant to note that representatives of the European Nuclear Energy Agency (ENEA) were present at all the meetings but only as observers.

As frequently happens when major projects are in the planning stage, there was also a behind-the-scenes lobbying effort going on, in this case by a group of highly-placed British scientists who thought Harwell should be designated as the location for the new reactor. Their sales pitch fell on deaf ears, however, and the politically charged issue of where the reactor was to be located was never raised at any of our meetings.

It was assumed that our report would be followed by a detailed design study that would provide realistic cost estimates and construction schedules and inspire the participating governments to get together, chose a site, provide funding and, ultimately, build the reactor and supporting facilities. By

early 1963 a draft of our report had been prepared and a final meeting was scheduled (in Paris) to edit it and give it our stamp of approval.

According to the agenda that came with the notice of the meeting, we'd be making a page-by-page review of the report to look for typos and imprecise or misleading statements and then, when all was finished, sign off on a final, as-edited version. But when Egelstaff arrived at the meeting he was accompanied by two men we'd never seen before, and were introduced to us as British Foreign Service officers. Something had been added to the agenda. What it was and why they were there remained a mystery until the end of the meeting when the more senior of the two stood up and announced that the British government required that we add a disclaimer to our report stating that it wasn't to be taken as a commitment for funding by any of the governments involved. Britain, it seemed, was having second thoughts about its involvement in the project. We were stunned.

It wasn't hard to guess what had generated this sudden turnabout: it was clearly a reaction to the French veto of Britain's entry into the European Common Market a few months earlier, in January of 1963, although financial considerations may also have played a role. Sidelined by the French, the British then decided to put their involvement in European science projects on hold.

This, we knew, would very likely undermine our project. Belgium, Denmark and the Netherlands, regarded their ties to the United Kingdom and America as vital to their scientific future and were likely to follow the British lead and opt out as well. After months of careful planning, it looked as though the high-flux reactor was about to be derailed by a political standoff that no one had anticipated.

Appalled by this unfortunate turn of events and convinced that a program of neutron-based research was important to Europe's long term scientific future, the ENEA then stepped in and announced it would take over and do what it could to keep the project from foundering. But there didn't seem to be much the ENEA could do and we left the meeting convinced that a high flux reactor was unlikely to be built in Europe until the French-British standoff was resolved.

Fortunately, the story didn't end there. What we didn't know was that one of the effects of the treaty of rapprochement that had been signed by West Germany and France (also in January of 1963) was to set off a behind-the-scenes search for a joint, high-visibility project to demonstrate the end of the long standing German-French rivalry. Maier-Leibnitz, as Director of the Laboratory for Technical Research at the Munich Technical University was regularly in contact with Joachim Pretsch, who had a two-part role in the West German government: he was both Director of the German Ministry of Research and Chancellor Adenauer's advisor on scientific matters. Pretsch, aware of our project through conversations with Maier-Leibnitz, brought it to the attention of Adenauer who responded favorably and passed it along to de Gaulle. Ultimately it became the centerpiece of a West German-French research center, The Institut Laue-Langevin (ILL), established in Grenoble, France in 1967.

Much to our surprise, Europe's high flux research reactor ended up being designed and built, not by the seven nations that planned it, but by just two of them, West Germany and France, as a symbol of their new-found unity!

November, 2018