WIIK TAKES OFFICE AS DESY DIRECTOR GENERAL, PRESIDES OVER HERA PHASE-IN

Björn H. Wiik has taken the reins at DESY (Deutsches Elektronen-Synchrotron), the Hamburg laboratory that currently is phasing in HERA, a large proton–electron collider of novel design (see PHYSICS TODAY, March 1992, page 21). Wiik succeeds Volker Soergel, who will take up work again as a professor of physics at the University of Heidelberg.

Obviously Wiik's principal immediate responsibility will be to get HERA, which did its first physics last year, working at design luminosity and to oversee the accelerator's experimental program. Other important tasks will involve the continued integration of the Zeuthen Institute for High-Energy Physics into the laboratory's programs, and planning for future accelerators at DESY. The Zeuthen institute, the leading high-energy physics center in the former East Germany, was made an affiliate of DESY last year.

Wiik has been associated with DESY since 1972, when he became a staff physicist. He was one of DESY's senior scientists from 1976 to 1981, when he was named a professor of physics at the University of Hamburg and project leader of the HERA proton complex. (He is one of two HERA project leaders.) Wiik became head of the DESY board of directors, the official title of the director general at the lab, on 1 March.

Wiik is considered the father of HERA at DESY because he conceived the idea of a proton–electron collider and pushed the idea to its realization, together with Soergel and Gus Voss, a member of the DESY directorate and project leader of the HERA electron complex. In 1972 Wiik coauthored an internal proposal to use the electron–positron accelerator DORIS as an electron–proton storage ring, and in 1977 he did a DESY report with Christopher Llewellyn Smith, who is now the designated director general of CERN, in which the scientific case for a large electron–proton machine was made persuasively.

The design parameters for HERA foresee collisions at a center-of-mass energy of 314 GeV and a luminosity of 1.5×10^{31} events/sec cm^2. "Because the luminosity per bunch collision is rather low in an eP collider," Wiik explains, "you need a large number of electron and proton bunches to get to the design luminosity." The design calls for 210 bunches per beam; about 10 per beam have been achieved so far.

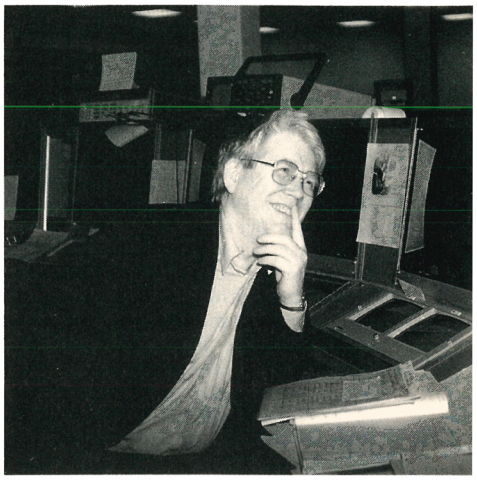
Wiik says that the performance of the machine was limited in its initial runs by the performance of the proton preinjectors and by the electron beam current that could be stored in HERA. But the specific luminosity observed per bunch collision was close to the design value, and proton beam lifetimes of 50 to 100 hours were observed in the colliding mode.

"So what we need to do is increase the number of bunches," Wiik says. The observed limit on the electron beam current was presumably due to arcing in the integrated vacuum pumps in a short piece of the electron beam pipe that caused heavy positive ions to be trapped in the field of the electron beam, rendering it unstable. After the faulty beam pipe was replaced, on the order of 100 bunches—corresponding to a current of 20–25 milliamps—could be stored, albeit without collisions. Collisions will resume around mid-April with 60 bunches of electrons colliding with 60 bunches of protons.

The best luminosity attained so far, according to Wiik, was 2.5×10^{29}, but HERA is expected to reach well above 10^{30} next year.

Scientific outlook

"With HERA," Wiik continues, "the structure of the proton can be studied in a new kinematical region of very low Bjorken x values [x being the fraction of the proton's momentum carried by the colliding quark], where the normal picture of perturbative quantum chromodynamics is expected to be no longer valid. The early physics program at HERA will focus on the study of the proton at low x, the properties of photon-induced processes and the search for leptoquarks. Leptoquarks are conjectured to occur in composite models where the leptons and quarks are made of common building blocks. As the luminosity grows, HERA will start to probe the proton and the structure of electroweak interactions at short distances and look for new physics like new leptons or signs of compositeness."



Björn H. Wiik

If HERA produces discoveries such as leptoquarks that go beyond the standard model, one effect surely would be to make CERN more acutely interested in using its proposed Large Hadron Collider as a proton–electron collider in conjunction with LEP. This would require more cooling to be installed, something vaguely planned now as a second stage for the LHC, but a discovery such as leptoquarks would give CERN "a powerful push" to move on to that second stage sooner than it otherwise might, Wiik says.

A native of Norway, Wiik went to high school in Bergen and then stud-

ied physics at the Technical University of Darmstadt in Germany, where he obtained a bachelor's diploma in 1963 and a PhD in 1965. From 1964 to 1965 he was an assistant in the Institute for Technical Nuclear Physics at the Darmstadt Technische Hochschule, and from 1965 to 1968 he was a research associate at the High Energy Physics Laboratory at Stanford University. From 1968 to 1972 he was a research associate at the Stanford Linear Accelerator Center.

—WILLIAM SWEET

NEW LAB CONTRACTS CONCLUDED BETWEEN DOE AND U OF CAL

Last November the US Department of Energy and the University of California concluded new five-year contracts governing the university's management of three major national labs, Lawrence Berkeley, Los Alamos and Lawrence Livermore—a matter that has been the subject of considerable contention within the University of California community in years past. Now that the ink is dry on the agreement, it seems apparent that the university stands to benefit from several novel aspects of the accord, and the labs may do better as well.

The involvement of the University of California in nuclear weapons work has always rubbed some university people the wrong way, and the contract negotiation cycle usually has been punctuated in recent decades by protests and calls upon the university to get out of the business. As recently as 1990 the faculty senate urged the regents to disassociate from the two weapons labs, a recommendation the regents chose to ignore.

Insiders to the negotiations say that the new agreement is not a standard Federal procurement contract. Although it is much closer to a standard Federal contract than the previous ones were, it contains many unique features that other national labs would be only too glad to obtain as well. At the same time, all parties to the new agreement describe it as "win–win" for both the university and DOE.

The contracts:

▷ codify protection of intellectual freedoms associated with research at the labs, a matter that sometimes gave rise to disputes in the past

▷ maintain the traditional public service relationship between the university and DOE on a no-gain, no-loss basis

▷ establish a high-level advisory committee to counsel the university on laboratory management and strategic directions and on the quality of scientific and technical work being performed

▷ set up a unit within the office of the university president to strengthen oversight of procurement and property management, environmental health and safety, and so on, based on agreed-upon performance standards

▷ create a procedure for resolving issues between the labs and the university and DOE

▷ and, not least, encourage more directed research at the labs by the university.

The university's allowance from DOE for overhead and management, which in the past has been negotiated yearly, most recently was about $12–13 million. The new contracts provide for close to $30 million, with $14 million reserved for management of risks associated with regulatory liabilities to which the university is exposed under the new contracts. If not required for meeting added expenses of this type, the funds would be available for university-directed research.

Naturally there is some apprehension at the labs that the new administrative unit in the president's office may turn out to be a major pain in the neck. Robert Kuckuck, the Livermore veteran who heads the office, says that it will have a "corporate headquarters/gatekeeper function" and will stress "performance-based management" and a "self-assessment/self-correction cycle."

Charles Shank, the director of Lawrence Berkeley, worries that new administrative requirements will be more onerous for LBL than for the weapons labs, which have larger budgets and therefore can handle increased overhead costs. Still, Shank feels the new conflict resolution process is a big plus.

Shank does not expect the new contract arrangements to have much impact on the way LBL redefines its mission, something he says the lab already is doing "in response to changing national expectations for science." At Livermore the situation could be the reverse. Robert Borchers, assistant to the LLNL director for university relations, points out that the new contract is "permeated with the idea that there ought to be closer scientific collaboration between the university and the labs as classified programs diminish and programs having to do with economic competitiveness come to the fore."

In the past year LLNL director John Nuckolls has established an expanded nonproliferation program under Robert Andrews, an energy program under David Baldwin and an environmental program under James Davis. Borchers expects to see an expansion of university–laboratory research institutes in areas such as environmental science and risk assessment, accelerator mass spectrometry, and lasers and optics.

In addition to Kuckuck's administrative unit, which will employ about 30 people, the university also continues to have a unit in the president's office responsible for programmatic affairs at the labs. Currently in charge of the unit is acting head Tommy Ambrose, who presumably will report to Walter Massey. Massey, who leaves the National Science Foundation this month (see page 74), has been named senior vice president and provost for the whole University of California system.

Sidney Drell, deputy director of the Stanford Linear Accelerator Center, heads the Council on the National Laboratories as well as its subpanel on national security affairs, which will advise the university's president, Jack Peltason. Drell says creation of the council is "a very significant step, particularly because the council has broader oversight responsibilities with respect to strategic planning than the university has ever previously undertaken." Drell thinks this structure deserves to be emulated at other major labs.

According to its charter, the council has three main functions: to review strategic plans of the labs as they change their research agendas; to review the scientific and technical quality of work undertaken at the labs; and to foster an atmosphere conducive to scientific inquiry and the development of new knowledge.

—WILLIAM SWEET

CHINA PRESSED ON RIGHTS IN CHANGED POLITICAL CONTEXT

In his acceptance speech at the Democratic convention last July, in the one paragraph devoted to foreign policy, candidate Bill Clinton said he would no longer "coddle tyrants, from Baghdad to Beijing." It was not lost on human rights activists that of the four countries mentioned in that single short paragraph, one was China.

Evidently it was not lost on the Chinese government, either. On 17 February the government announced it was releasing Wang Dan, who had been first on the list of 21 most-