Minutes of the 37^{th} Meeting of the PRC

DESY 26^{th} - 27^{th} January 1995

PRC members present:

F.Barreiro (Madrid), W.Buchmüller (DESY), F.Eisele (Heidelberg,Wissenschaftlicher Rat), R.Felst (DESY), R.-D.Heuer (CERN), G.Heinzelmann (Hamburg), W.Hofmann (MPI-Heidelberg), J.Jaros (SLAC), J.May (DESY), J.Rander (Saclay), D.H.Saxon (Glasgow), P.Söding (DESY-IfH Zeuthen), R.Sosnowski (Warsaw), D.Trines (DESY), A.Wagner (DESY), N.Wermes (Bonn), B.H.Wiik (DESY,chairman), C.Youngman (DESY,secretary)

Non PRC members present:

HERA - F.Willeke (DESY), B.Parker (DESY). [26^{th}]
HERA-B - A.S.Schwarz (DESY), H.Kapitza (Dortmund). [26^{th}]
H1 - J.Feltesse (Saclay), P.Schleper (Heidelberg), U.Straumann (DESY). [26^{th}]
ZEUS - B.Foster (Britol), R.Klanner (DESY), B.Löhr (DESY). [27^{th}]
HERMES - J.van den Brand (NIKHEF), E.Steffens (MPI-Heidelberg). [27^{th}]

The PRC received the following documents:

PRC 95/01
HEAR-B An Experiment to Study CP Violation in the B System Using an Internal Target at the HERA Proton Ring.

Open session. Jan. 26^{th}, 10:30, Main Auditorium

H1 status report. P.Schleper (Heidelberg).

ZEUS status report. B.Foster (Bristol).

HERMES status report. J.van den Brand (NIKHEF).

HERA-B status report. H.Kapitza (Dortmund).

Closed sessions: Jan. 26^{th} - 27^{th}, 14:30-18:00 and 9:00-12:00, Sem. Rm. 1

1. Approval of the minutes and matters arising from the last meeting.
2. HERA status report.
3. HERA-B machine interface report.
4. Review of the HERA-B design report.
5. Review of H1
6. Review of ZEUS
7. Review of HERMES
8. Miscellaneous

Item 1. Approval of the minutes and matters arising.

The chairman welcomed D.Trines as a new member of the PRC. He replaces G.-A.Voss who retired at the end of 94. F.Eisele was also welcomed as a new Wissenschaftlicher

Rat representative.

The PRC members L.Foá (CERN) and A.D.Martin (Durham) were unable to attend the 37^{th} PRC.

The chairman announced that J.Rander had agreed to be a referee for the ZEUS experiment.

The minutes of the 36^{th} meeting of the PRC were approved subject to minor corrections.

Item 2. HERA status report.

F. Willeke reported on the status of HERA.

In 94 HERA delivered 6 pb^{-1} to both H1 and ZEUS. The peak and average luminosity were 4.7 and 2.1×10^{30} $cm^{-2}s^{-1}$ respectively.
Average I_{e+} and I_p currents of 25 and 38 mA were stored with peak values of 33 and 60 mA respectively.
Beam lifetimes were typically 8-10 hours for positrons and 300 hours for protons.
The average specific luminosity was 4.5×10^{29} $cm^{-2}s^{-1}mA^{-1}$.
The operational efficiency of the machine improved slightly. In 93 luminosity was provided for 26% of the scheduled running time, in 94 this fraction was 32%. The improvement in delivered luminosity was achieved by increasing the beam currents and by the move from electrons to positrons which significantly improved the lepton beam lifetime.
A number of improvements to the HERA electron ring are foreseen. The breakdown of the electron beam lifetime, for $E_e > 20$GeV and $I_e \geq 15$mA is believed to be due to clusters of particles emitted from the vacuum pumps. Reducing the pump HV resulted in insufficient pumping performance and is not a solution. It is planned to install NEG (non evaporating getter pumps) in one HERA octant during the 95/96 shutdown, with a complete installation during 97/98 if the solution works.
The instability of the positron beam at $I_{e+} \geq 35$mA, due to tuning difficulties, should be corrected for the 95 running.
Beam alignment problems should be alleviated by using a PC based magnet control system. This allows measurement of the beam orbit position w.r.t. to the magnet field axis with 10μm accuracy.

The improvements made to DESY III and PETRA resulted in an increased proton beam intensity. Bunch currents 70% of the design were achieved. A 5 MHz transverse multibunch damper system has been successfully tested. This will reduce the instabilities responsible for beam blow up and will be installed during the shutdown.

The HERA plans for 95 foresee 190 days of running. Peak luminosities of $7.5\times10^{30}cm^{-2}s^{-1}$ with average beam currents of $I_{e+} \sim 50$ mA and $I_p \sim 60$ mA are anticipated. The goal is to deliver 15 pb^{-1} to each ep experiment. Luminosity running will begin around the 8^{th} of May and terminate on the 1^{st} of December.

The long term development plan for HERA was reviewed. A number of existing installations are being upgraded or replaced. These include the quench protection, new proton ring power supplies, PC based control systems for PETRA and HERA and the possible replacement of electron ring vacuum pumps with NEG pumps.
Research has been started on a proton emittance control system, capable of operating

during luminosity running. Additionally the use of a booster synchrotron to raise the proton intensity is being discussed.

Open discussion

D.Saxon asked whether the installation of HERA-B would degrade the beam lifetimes and lead to an increase in the emittance. It was stated that large scale effects of this type were not expected.

F.Eisele inquired whether electron running was still foreseen for 97 and whether the 95 $15pb^{-1}$ target would be compromised by the HERMES requirements. F.Willeke confirmed that electron running was planned for 97 and that the HERMES requirements did not directly conflict with ep running.

In response to R.Sosnowski's question, it was stated that the beampipe modifications foreseen for e or γ tagger installations at H1 and ZEUS would not conflict with the machine. These changes are well outside the machine aperture.

D.Saxon observed that the proton luminosity bottleneck was due to PETRA, in this case why was the booster now being considered. F.Willeke stated that the PETRA bottleneck was associated with the old technology used. The new control systems should cure this problem. The primary limitation results from the low injection energy into DESY III which allows the emittance to increase. The booster will prevent this increase.

Item 3. HERA-B machine interface report.

B.Parker reported on the HERA-B machine interface.

The ongoing design effort has secured a number of advantageous solutions. The beam dump kicker magnets have been completely removed from the experiments μ filter. This will required changes in the lattice and the use of new quadrapole magnets with half the normal gap spacing.
The operation of HERA-B, in particular the dipole magnet, has been decoupled from HERA. New dipole magnets (type BR), upstream of the experiment, maximize the space available to the detector and result in the proton beam having essentially the same path irrespective of the HERA-B dipole magnet polarity.
The primary HERA collimator has been redesigned. The vertical collimator is now 24m upstream of the experiment. This solution is expected to have the added benefit of lowering background rates at H1 and ZEUS.
The requirement of compensating the electron beam for the experiments magnetic field has been solved conceptually. The engineering work involved is considerable.

The beam impedance is identifiably the most critical interface issue. The experiments vertex chamber, 8 Si detector paddles closely approaching the beam, is subject to high wake field losses ($\sim$1kW). This is certainly too large and a solution must be found.

In conclusion most interfacing problems have been solved. A very tight schedule now exists for ordering and construction and little time is available for prototyping. The beam impedance problem remains.

Open discussion

W.Hofmann thanked the machine group for the large effort w.r.t. the HERA-B interface. He also stated that discussions are continuing with the aim of solving the beam impedance problem.

B.Wiik asked when the vertex chamber was to be installed. W.Hofmann replied that an order for the vertex chamber tank had to be made in May to allow installation in the 95/96 shutdown. It was expected that the design work would converge allowing the order to be placed on time.

B.Wiik asked whether a backup solution was available in case the vertex chamber was not available. W.Hofmann stated that the detector design was sufficiently modular to allow a later installation.

B.Parker restated the need for accurate drawings. These would allow the machine group to carry out detailed calculations. W.Hofmann replied that the drawings would be made available as soon as possible.

A.Wagner asked whether any conclusions could be drawn from experience gained with the small test target used in 94. F.Willeke stated that, as expected, no problems had been seen. Conclusions w.r.t. the vertex tank could not be drawn.

J.May asked whether the impedance effects on the beam could be compensated. B.Parker stated that this could be done provided there were no detector constraints, which there are.

B.Wiik asked whether there were any remaining worries about the dump kicker installation. F.Willeke replied that no issues remained apart from the tight ordering schedule. Additionally little time would be available for testing.

J.Jaros recalled that an experiment at the CERN SPS had had a setup similar to the vertex chamber. B.Wiik replied that the bunch length was longer at the SPS. In this sense the two setups are not directly comparable.

B.Wiik inquired whether the Si paddle separation from the beam could be increased. W.Hofmann stated that this was possible but would result in degraded resolution. B.Parker added that the vertex tank's exit window alone must absorb 150 W of power.

J.Jaros asked whether the power deposition was related to the beam energy. D.Trines replied that it was only dependent on the bunch length.

In reply to R.-D.Heuer's question, B.Wiik stated that a shorter bunch length option would not be available to the ep experiments.

B.Wiik inquired as to the status of the lepton beam compensation. B.Parker replied that the solution exists and that it's technical and engineering feasibility had been verified. An engineering design has not been produced due to the experiments changing dimensions.

D.Saxon asked whether the proposed changes would degrade the quality of the beams. B.Parker stated that the background at ZEUS should be improved.

F.Eisele pointed out that in general ep backgrounds are understood but studies should be encouraged in view of the differences seen between apparently identical fills. F.Willeke stated that a number of background effects have been understood whereas some remain obscure. The 94 tests of the HERA-B target had caused little trigger backgrounds in the ep experiments although rates in the ZEUS FNC (forward neutron calorimeter) had been large.

F.Eisele asked whether a systematic program to understand these effects was underway. It was stated that machine studies could be made if requested.

In response to B.Wiik's question it was stated that the positioning of the HERA transverse polarimeter was solved w.r.t. to the HERA-B installation.

D.Saxon asked whether the target wires were retractable. W.Hofmann confirmed that this was the case and added that the wires would be inserted before the ep experiments saw luminosity. R.Felst reiterated the need for a systematic study of target effects with both the old and new optics.

J.Jaros queried the accuracy of beamline and magnet axis alignment. D.Trines replied that 0.3 mm was currently achieved in the straight sections. Upstream of HERA-B a beam monitor will be installed giving improved alignment.

Item 4. Review of the HERA-B design report.

Referees's report

R.-D.Heuer presented the conclusions of both referees.

The open collaboration meeting had been a success and the size of the collaboration has essentially doubled.

All sub-detectors are now covered in terms of manpower requirements. Worries remain w.r.t. the inner tracking system, due to the groups involvement in other experiments. Leadership of the RICH photon detector construction remains open. The first level trigger system will require funding for manpower in one of the groups. The DAQ issues are being solved whereas the leadership question is still open. The MSGCs (micro strip gas chambers) remain a concern.
The magnet design has been resolved and a conventional magnet will be ordered from the Russian manufacturer of the HERMES magnet.
The outer TRD (transition radiation detector) has now been rejected and the redesign of the Si detectors has reduced the amount of material in the detector.
Pieces of the JADE detector are being reused in the μ absorber.
The development of a high P_t trigger may be problematic in view of the resources it will initially absorb.
The beam impedance issue remains to be solved. Possible background effects on the ep experiments must be systematically studied.

The staged construction and installation looks good and will allow experience to be gained in this extremely challenging design. Note that the time schedule requires that funding be made available as soon as possible. This will allow the collaboration to move to the construction phase.

A number of technical issues remain to be solved. The MSGC design and prototype tests should be concentrated on in 95. It has not yet been demonstrated that the chambers will work over a long time period. The MSGC group should be able to answer this question at the end of 95. A fallback option should be identified.
Concern exists about the photon yield of the RICH counter. It is 50% of that expected. Thus the safety margin has been removed. The possibility that this is due to a degrading of the mirror reflectivity is being investigated and a new mirror is due to arrive in March. The decision as to which readout system, TMAE or CsI, would be

used, scheduled for December 94, has been delayed until July. Thus the construction schedule is tight.
Multiple DAQ solutions exist, of which one must be chosen.
In general many sub-detectors need rate and dosage testing. The online and offline software must also be well organized.

The chairman thanked the referees for their report.

Open discussion

J.Jaros reviewed the BABAR experiments schedule. The technical design report is being prepared and will be discussed early in February. The SLAC program committee will meet in March and the DOE will review the experiment in April.
The schedule has not been changed. The detector will be assembled in 98 and data taking will start in 99.

B.Wiik asked whether the initial costing of the experiment was increasing. J.Jaros replied that the size of the CsI detector was an available mechanism of regulating the cost of the experiment. In view of this cost overrun problems should not be expected.

In reply to B.Wiik, J.Jaros stated that the KEK B factory detector design were more advanced than BABAR but that the KEK machine design will probably be more problematic. The KEK schedule is identical to that of SLAC.

R.Sosnowski asked whether the HERA-B installation effects on H1 and ZEUS could be qualified. F.Willeke concluded, from the 94 test, that only small problems should exist. The requirement of increasing the HERA performance and installing HERA-B needed more testing. A large number of machine parameters remain available for solutions of unknown problems that might occur.

A.Wagner recalled that the initial RICH test gave the expected number of photons. A.Schwarz replied that a calculation error was responsible for the discrepancy. W.Hofmann added that a $\sim 10\%$ ageing effect had also been observed.

A.Wagner asked whether the decision not to open the detector on injection was correct. W.Hofmann replied that the sensitive vertex chamber silicon was retracted from the beam aperture on injection. He also stated that the particle flux generated by the experiment itself is so high that for the electromagnetic calorimeter no special measures are foreseen during injection.

J.Jaros stated that the improvement to the detectors electron measurements had resulted from the removal of material from the detector. What would be the effect of finalizing the inner and outer tracker design on the detector thickness ? H.Kapitza replied that contingency for the structural material needed had already been included in the calculations made.

F.Eisele pointed out that the local spikes in the distribution of material within the detector are important. The average of material is often well understood but the spikes not.

D.Saxon stated that detector aperture changes had occurred during the design phase and asked what effect these have had on the physics sensitivity of the detector in particular CP and J/ψ physics. W.Hofmann replied that the μ performance had not been affected and that the e detection acceptance had increased by 1.5 to be half that of the μ's. The discovery of the B^{**} by OPAL and DELPHI will add to the physics range of the detector due to their tagability.

D.Saxon asked whether the apparently missing funding for the TRD was due to the experiments view that this detector was expendable. W.Hofmann stated that the TRD could be installed without electronics, this could be added later, thus stretching the funding.

J.Jaros asked whether new results on σ_{BB} had been published. It was stated that no new results from E771 could be expected. The results shown in the technical report are tabulated with σ_{BB} values of 6,12 and 16 nb. The middle value is being used for the plots. A.Schwarz added that the B^{**} discovery resulted in a doubling of the useful cross-section.

P.Söding recalled the MSGC risks and requested the backup solutions and their effects on the funding. F.Eisele stated that large MSGC have been shown to survive laboratory accelerated aging although no results are available for natural longterm ageing. Currently the experiment is repeating these tests. If the results are negative no attempt will be made to find a new technology. The only safe fallback is a silicon detector of $\sim$ 5m^2 which would be more expensive. A decision will be made at the end on 95.

D.Saxon pointed out that MSGCs are poisoned easily. Replacement chambers should therefore be foreseen. F.Eisele stated that chamber replacement was being taken seriously.

D.Trines stated that the installed rails in the HERA-B hall restrict the design room of the machine and requested that detailed design drawings be made available to the machine.

Closed discussion

The chairman stated that a final decision was needed. The strength of the collaboration was now sufficient and the physics aims were good. The problems that still need to be addressed include the beam impedance and the RICH loss of efficiency.

J.Jaros reported that there seemed to be no unanimity concerning the number of photons. Schmidt-Parzefall concludes that 10 γ's in the TMAE test translate to 36 in the full detector. The proposal's study of the number of γ's required shows that 20 are required with a 5% π to kaon misidentification.

R.-D.Heuer concluded that only 20 - 25 γ's might be expected from the full detector. This is very tight.

N.Wermes pointed out that the CERES experiment at CERN had, with 10 γ's and no additional tracking, worked in a heavy ion 100 tracks/event environment.

R.Sosnowski asked whether any short term test could be made to improve the confidence concerning the RICH. R.-D.Heuer answered that the planned mirror reflectivity measurement was the only such test. The reflectivity assumed is 80%.

D.Saxon pointed out that there had been no discussion of high purity triggers.
R.-D.Heuer replied that both the first level and DAQ electronics designs were advanced.
J.Jaros added that the time required for the trigger decision had been halved, showing

that successful design work was underway.

The chairman summarized the committee's discussion of the detector by stating that the design was sound with worries remaining in the RICH and MSGC sub-detectors.

The discussion of the machine interface was opened by B.Wiik. The nervousness of the ZEUS and H1 collaborations was understandable, but no insurmountable problems were anticipated. Indeed the background conditions may improve. The critical problem remains the beam impedance which must be understood before final acceptance.

D.Saxon asked whether shielding the vertex tank from the beam with a smooth sleeve was possible. D.Trines said that such a solution had not been found. B.Wiik added that this would possibly compromise the detector.

N.Wermes requested a statement regarding the consequences of the current design. F.Willeke replied that the beam intensity, and therefore the luminosity, would be limited. Additional problems due to higher order mode losses could also not be excluded.

The chairman concluded the discussion of HERA-B. The PRC committee recommendations are appended to the minutes.

Item 5. Review of H1.

U.Straumann reviewed the status of the shutdown installation schedule.

The construction of the SPACAL electromagnetic and hadronic detectors is progressing according to schedule. The associated electronics and DAQ systems will also be available. Teststand measurements of cosmic rays are being made. There has been a small delay in the cable installation.

The BDC (backward drift chamber) has been delayed, although it is expected that three of the four planes will be completed by mid-February. Electronics and DAQ systems are on schedule.

Half of the CST (central silicon tracker) detector will be ready for installation. This will use a prototype of the electronics readout system, the final version is scheduled to arrive in May. The BST (backward silicon tracker) prototype (2ϕ sectors and 50% of the r-strips) will be available by mid-February.

The two station FPS (forward proton spectrometer) installation is progressing. The photo-multipliers have been delayed, delivery is now expected in April.

Referee's report

N.Wermes reported on the electron tagger. A test installation at 44m with a modified beampipe is planned. The subsequent test of background conditions seen and machine interfacing problems (heating,higher order mode losses, etc.) will allow a decision with regards to a full installation. No critical items for the detectors were found.

The current FPS,SPACAL,BDC,BST and CST are making impressive progress and all critical items remain on schedule.

At the previous PRC the Si detectors were expected to be delayed by a year. Two half rings of the CST have, however, been finished. The S/N ratio of the new ACP chips is also better than expected.

R.Sosnowski added that no additions to the already known delays have appeared.

Open discussion

The chairman thanked the referees and concluded that the electron tagger test should go ahead.

A.Wagner inquired about the further usage of the TOF. U.Straumann replied that no space remained for the TOF and that it had been removed. The timing measurement would now be provided by the SPACAL.

A.Wagner asked whether the BST detector pad readout would be missing in 95. U.Straumann stated that this was correct. A small scale test of the pad readout would be made.

D.Saxon pointed out that the shown SPACAL test cosmic ray events appeared to have large signal size fluctuations. U.Straumann replied that calibration corrections had not been applied.

In reply to J.May's question, U.Straumann stated that a temporary aluminium beampipe was currently installed. A second attempt to manufacture a thin carbon fibre pipe would be made.

J.May asked whether the next shutdown would be used to complete the installations not finished in the current shutdown. It was stated that this would be the case.

J.Feltesse stated that the PRC would be asked to approve the BST2 installation on successful operation of BST1.

J.May asked whether any new upgrades plans where being developed. J.Feltesse replied that no more plans were currently in the pipeline.

The chairman ended the session by looking forward to the successful operation of the H1 detector in 95.

Item 6. Review of ZEUS.

B.Löhr reviewed the status of the shutdown installation schedule.

The new beampipe is undergoing final tests and will be installed at the end of January. The beampipe calorimeter, BPC, will be installed in April.
Forward and rear presamplers, preceding the experiments DU calorimeters, are ready and will be installed in February. The support structure of the associated trigger system is currently being constructed.
The BAC calorimeter wire (HIT) electronics is being installed. Previously only the pad readout had been available.
The 26 Si detectors from 3 LPS (leading proton spectrometer) pots will now be installed in April. One half day is required for each pot.
The upgrade of the experiments TLT (third level trigger computer farm) has been delayed. The doubling of the CPU performance should, however, be available for the start of data taking.
Repairs have been completed to the VXD (vertex detector) and FDET (forward detector) wire chambers where 4 and 1 wires were replaced, respectively.

Open discussion

R.Sosnowski inquired into the background conditions expected in the electron calorimeter at -44m. R.Klanner replied that the word calorimeter was perhaps misleading. The device is basically a tagger, as such it is difficult to quantify background conditions. It's installation is planed for this shutdown.

F.Eisele stated that the VXD resolution had been given as 170 μm. Was this correct and is the detector capable of seeing secondary vertices ? B.Foster replied that the resolution varied between 70 and 150 μm depending on drift distance. The ability to see secondaries depends on the transverse momentum.

P.Söding asked whether the higher beam currents expected would cause problems in the VXD and whether the VXD had been operational for all the 94 luminosity running. R.Klanner replied that no problems had been reported. Additionally the design is very modular allowing exchange of damaged modules if required. The VXD had been on throughout the 94 running period.

J.May asked whether the newly installed beampipe would be the final one. It was felt that a definitive answer could not be given.

B.Wiik asked for the number of LPS stations fully equipped. B.Löhr replied that S4,S5 and S6 were equipped and that each additional station required half a day. Installation was expected in April. B.Wiik suggested that the remaining installations should be carried out in parallel.

In reply to B.Wiik's question, it was stated that the electron calorimeter installation was now expected in April.

R.Klanner then reviewed the longer term ZEUS upgrade plans.

The μ-vertex detector remains dormant. No group has been found to build the device.

As stated at the last PRC the FHES (forward hadron electron separator) construction was continuing. Currently 40% of the diodes are available and ski production, in Moscow, is progressing. The analogue electronics production in Spain and digital electronics production in Japan were continuing as scheduled. It is still planned to install the full FHES in the 95/96 shutdown.

The BHES (barrel hadron electron separator) question could not be resolved at the November collaboration meeting. A strong group has not been found and discussion will continue at the next meeting.

The design of a plug calorimeter in the forward region has begun. Two designs are being considered: 1) a calorimeter 2.2m from the interaction point which would require a new beampipe and 2) a H1 type calorimeter $\sim$ 4.5m from the interaction point. The second solution is not so favourable due to possible secondary interactions in the material proceeding the calorimeter. The final design is required to be dense thus minimizing transverse shower development. The energy resolution is not critical.
The PRC should expect a proposal for the plug calorimeter and possibly a BHES proposal.

Open discussion

The chairman asked when a PRC decision would be required. R.Klanner replied that a decision in a May PRC meeting would not be required.

W.Buchmüller requested a statement concerning the polarization measurement from ρ production at large Q^2. R.Klanner replied that a measurement should be reportable in $\sim$ 3 weeks.

J.May asked whether the long event reconstruction time had been solved and how often the 93 data was reprocessed. B.Foster stated that the reconstruction time remained large and that the data was reprocessed twice.

In reply to J.May's question, it was stated that the required Monte Carlo generation rate of 1M events/week was almost realized. Additional computing resources at collaborating institutes, notably DRAL and Tokyo, will allow the target to be reached.

Item 7. Review of HERMES.

J.van den Brand reviewed the status of the HERMES experiment.

Much progress has been made w.r.t. hardware installation. The manpower now becoming available is being directed into analysis software. A large number of software groups have been defined under the coordination of M.Dueren. The early production of physics papers has been addressed.

The experiments computing needs have been solved by the DESY decision to provide 20 SGI 200 MHz machines and 100 GB of disk storage.

The problems observed with the transverse beam polarization measurements are being addressed by a task force. During October and November (94) 14 three hour measurements of the polarization rise time, with stable HERA conditions, were made. The beam stability, as measured by the χ^2, was good but the measured uncertainty in P_T of 8% was again found. The expected error is 2%. It has not been possible to understand the size of the measured uncertainty.
It has been decided to make improvements to the polarimeter. The light transport system will be rebuilt according to the original design. The analyser will also be modified and a measurement of the light source position will be made. This setup will be used in 95 and it is hoped that the measurement uncertainty problem will be understood.

It was stated that the P_L polarimeter proposal (PRC 94/05) should be reviewed. Both P_L and P_T measurements are required by the experiment. The P_L measurement requires modifications to be made to the beampipe and these must be planned in advance. A decision is therefore required from the PRC as well as support from the appropriate machine groups.

Referee's report

D.Saxon stated that the effort in understanding the P_T measurement uncertainties was impressive. The changes required by the installation of HERA-B will be carried out in the 95/96 shutdown.
The P_L proposal, submitted to the PRC, should be pursued whereby an overall policy w.r.t. polarization measurements is required. The installation of a P_L polarimeter could be carried out in the 95/96 shutdown.

The HERMES installation schedules are being met. Some problems in the MSGC vertex and front chambers exist. The design changes being made to the MSGCs should result in a lower operating voltage and help solve the present problem.

ACP chip problems, regarded as minor, concerning improved input protection and radiation hardness exist. The new chips ordered have been delayed but old chips can be used and replaced later.

The increased size of the collaboration at DESY has resulted in an office shortage.

Open discussion

D.Trines stated that a P_T machine group is being setup. The beamline changes required by the P_L proposal must, however, be driven by HERMES. Additionally the work required to modify the existing P_T polarimeter and to construct and install a new P_L polarimeter should not be underestimated.

The chairman summarized that a P_L measurement would be extremely valuable, for HERMES, and suggested that progress on the P_L measurement could be made if HERMES and the appropriate machine groups produce a technical design. The physics improvements produced by such a device should also be addressed. The proposal could then be discussed at the PRC.

B.Wiik asked whether HERMES required a PRC meeting in May. J.van den Brand replied that the proposal to build a RICH counter for installation in the 96/97 might be difficult if a decision was left until the September meeting. Groups from Argonne, DUBNA, Bari and France are either committed or interested in joining. A decision in May might therefore be advantageous so that the group funding requirements could be made to the corresponding agencies.
D.Saxon stated that a RICH proposal in May would be very difficult. RICH technology remains difficult.
A.Wagner asked whether the HERMES Čerenkov group would be involved in the RICH design. If so this might compromise the Čerenkov schedule. J.van den Brand replied that this issue is being studied.

P.Söding stated that a PRC discussion should centre on the physics benefits of the proposed RICH. This should be scheduled for September. A.Wagner suggested that a RICH proposal could only be considered when experience had been gained from the 95 running.

The chairman concluded the discussion by stating that the RICH proposal should be submitted when it is ready. This would then be reviewed by the referee and if an earlier meeting of the PRC is justified then this will be organized. In the meantime prototyping should continue and the manpower situation should be clarified.

Item 8. Miscellaneous.

The next PRC meeting is scheduled for the 4-5th September.

(C.Youngman - 21st March 1995)

PRC Recommendations concerning HERA-B

In May 1994 the HERA-B collaboration has submitted its proposal to measure the CP-violation at HERA (DESY-PRC-94/02), followed by a technical design report in December 1994. The PRC in its meeting on 26.1.1995 has once more critically evaluated the proposal and arrived at the following conclusions:

Physics: The PRC is of the opinion that the physics case is excellent and that the capabilities of the experiment have been further enhanced by adding a high p_T trigger. The impact of the experiment depends however critically on the fact that the proposed time scale is met.

Detector: The PRC recognizes that the collaboration has simplified the design and significantly increased the strength of the collaboration. The collaboration thus has gained the necessary strength to build the detector. Some concern is expressed with respect to the technical aspects of certain sub-detector elements, especially the RICH and the MSGC.

From the point of view of the physics case and the detector design the PRC therefore recommends the approval of the HERA-B experiment.

Interface: The PRC discussed at length the interface between HERA-B and the machine. The machine group has proposed a modified lattice in the west area which meets the requirements of the experiments. Three issues of concern are pointed out:

1) Interference of HERA-B and the collider experiments H1 and ZEUS:

The results of measurements in 1994 show no serious interference between the HERA-B target operation and the related background observed at ZEUS. More measurement and studies must be made with high priority in 1995.

2) Compensation of the dipole field:

A conceptional design exists which fulfills the shielding requirements defined by the machine performance. However, concern is expressed about the status of the final construction. A further delay in this area might seriously endanger the installation of the whole magnet in the 1995/96 shutdown.

3) Effect of the vertex tank on the proton beam:

Serious concern is expressed about the interference between the vertex tank, as designed, and the proton beam due to wake fields generated by the structure of detectors inside the tank. The PRC requests that the HERA-B collaboration together with members of the machine group forms a study group to work on the design and the simulation of an HF shield.

The PRC recommends that an approval of HERA-B should be given once a design is presented which meets the requirements of the machine and does not compromise the physics capabilities of the experiment.