Minutes of the 38th Meeting of the PRC

DESY 4th - 5th September 1995

PRC members present:

F.Eisele (Heidelberg,Wissenschaftlicher Rat), R.Felst (DESY), L.Foá (CERN), U.Gensch (DESY), R.-D.Heuer (CERN), W.Hofmann (MPI-Heidelberg), J.Jaros (SLAC), A.D.Martin (Durham), 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), K.Sinram (DESY). [4th]
ZEUS - M.Derrick (Argonne), R.Klanner (DESY), B.Löhr (DESY). [4th]
H1 - R.Eichler (ETH-Zurich), P.Biddulph (Manchester), G.Müller (DESY), W.Bartel (DESY). [4th]
HERMES - J.van den Brand (NIKHEF), E.Steffens (MPI-Heidelberg). [5th]
HERA-B - A.S.Schwarz (DESY), M.Medinnis (UCLA), J.Spengler (DESY). [5th]
Neutrino Astrophysics - C.Spiering (DESY-IfH Zeuthen). [5th]
Linear Collider Project - M.Leenen (DESY). [5th]

The PRC received the following documents:

PRC 95/02
Proposal for a Forward Neutron Calorimeter for the H1 Experiment at DESY.

PRC 95/03
Status Report for the Forward Proton Spectrometer of H1.

Supplementary documents to the report on neutrino astrophysics.

Open session. September 4th, 10:30, Main Auditorium

HERA status report. W.Bialowons (DESY).

ZEUS status report. M.Derrick (Argonne).

H1 status report. G.Müller (DESY).

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

HERA-B status report. M.Medinnis (UCLA).

Closed sessions: September 4th - 5th, 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.
3. Review of ZEUS.
4. Review of H1.
5. Review of HERMES.
6. Review of HERA-B.

7. Neutrino Astrophysics at Zeuthen.

8. Report on the Linear Collider Project.

9. Miscellaneous.

Item 1. Approval of the minutes and matters arising.

The chairman welcomed U.Gensch as a new member of the PRC. He replaces J.May who has returned to CERN.

The PRC members F.Barreiro (Madrid), W.Buchmüller (DESY) and G.Heinzelmann (Hamburg) were unable to attend the 38^{th} PRC.

The minutes of the 37^{th} meeting of the PRC were approved.

Item 2. HERA status report.

The chairman opened the session by thanking the open session speaker for his talk.

R.-D.Heuer asked whether the machine group confidence was high w.r.t. producing higher luminosity in 96. F.Willeke replied that the RF problem which had limited positron current in 94 had been solved. Unfortunately sparking in the input coupler of the super conducting cavity, seen at 35mA, is now limiting higher luminosities. A similar problem has been observed with LEP cavities and this was solved by modifying the electrical connections to the cavity. RF pulse cleaning of the cavities is also expected to improve the problem. These options are currently under discussion. An additional problem is anticipated for $I_{e+} \geq 40$ mA. since the probability of an RF station tripping is seen to be high. The 1200 KW power dissipation at 40 mA. is well below the design value of 1400 KW thus relaxing the trip requirement maybe an option. In general cooling problems exist and these must be addressed.

F.Eisele requested a prediction for the luminosity that would be delivered in 96. F.Willeke stated that a proton current of 80 mA. can be expected although emittance blowup problems exist during the beam transport from PETRA to HERA. B.Wiik added that the 30pb^{-1} presented in the open presentation would be difficult due to the HERA-B beamline changes scheduled for the shutdown.

D.Saxon observed that the beam polarization, measured during the previous few weeks, had dropped from 70% to 45%. Is this effect understood and what are the prospects for sustained high polarization ? F.Willeke replied that during the first half of August polarization had indeed been lower. During the same period improvements to the backgrounds at H1 and HERMES was required and no attempt was made to maintain polarization. The background conditions are now stable and polarization tuning should restore the original conditions. B.Wiik pointed out that 50% polarization was assumed in the HERMES proposal.

L.Foá observed that the integration of new experiments into HERA appeared to cause problems at the operator level. F.Willeke replied that ep luminosity had been lost during the learning phase. The conclusion that should be drawn is that improvements in the machine control systems are still required. The test of operating H1, HERA-B, HERMES and ZEUS concurrently had, however, been successful.

D.Saxon asked whether the satellite bunches associated with the proton beam were a cause of concern and whether their intensity was measured continuously. F.Willeke stated that the bunch length had increased slightly during 95. Improved beam extraction techniques have been prepared but not tested. These should reduce the bunch length. A reduction in the bunch length in PETRA has also been prepared. A significant reduction in the bunch length can therefore be expected. R.Felst added that H1 have, so far, observed smaller satellite bunch intensities in 95 and that this level, of a few percent, this is considered to be acceptable.

D.Saxon queried the predictive power of the HERA-B tests during ep luminosity. One run in seven was judged to be good at ZEUS. F.Willeke replied that the ZEUS LPS did see higher backgrounds. More machine studies were required to systematically study the backgrounds seen. It is, however, believed that the machine can be adjusted to remove the additional backgrounds.

F.Eisele stated that the ZEUS LPS background rates show large fluctuations which are independent of the HERA-B studies.

R.Felst stated that the non reproducibility of the test results was worrying.

J.Rander considered that more tests were required during the current running period. The seven tests made so far, are insufficient to provide any conclusions. W.Hofmann pointed out that the seven runs were those at the full 40 MHz trigger rate, additional runs had been made but not at that rate. HERA-B were now studying the results. The electronics used in the tests will be removed in September. B.Wiik requested that HERA-B should not dismantle the test setup until the machine group was satisfied with the results.

The chairman concluded the discussion on HERA by stating that a group had been formed to identify changes to the preaccelerator and HERA required to increase the luminosity beyond its design value. This group will report in the spring of 96.

Item 3. Review of ZEUS

The chairman thanked the ZEUS open session speaker for his comprehensive presentation and suggested that the physics aspects should be discussed.

B.Wiik asked why ZEUS disagrees with the H1 statements about the Pomeron. R.Klanner stated that ZEUS has made two analyses. The first, which is similar to H1's, makes cuts to select a sample of enriched diffractive events. Models of diffractive and non diffractive scattering are then used to obtain the diffractive structure functions. The result of this analysis is compatible with that of H1. The second analysis assumes that in non diffractive processes low masses are exponentially surpressed. The result of this analysis are just compatible with the first and incompatible with that of H1.

A.D.Martin asked about results from the ZEUS forward neutron calorimeter (FNC). It was stated that the 93 data from the prototype FNC are basically analysed, but not yet public. Diffractive events with forward neutrons, from the decay of excited protons, are observed. They allow the separation of π exchange from diffractive events.

N.Wermes requested the momentum resolution obtained by the LPS when only two stations were used and asked whether constraints from additional detectors, e.g. the e-tagger, had been used to look at the kinematic resolution. R.Klanner replied that typically only two stations were ever hit. Three stations are fired in 5-10% of good events. The momentum resolution, $\delta p/p \sim 5\times10^{-6}$, is almost independent of the number of stations hit. The third measurement allows the vertex to be measured and not assumed as in the two station case. The LPS is calibrated with ρ events at $Q^2 \sim 0$ GeV^2 which allow a precise understanding of the resolution.

D.Saxon asked whether the LPS backgrounds were physics events or beam related. M.Derrick stated that the acceptance for the diffractive peak is 10%. The background contains real events.

L.Foá praised the Q^2 coverage improvements made since 94 and asked when the data would be analysed and what plans existed for further improvements. R.Klanner replied that $Q^2 \geq 0.1$ GeV^2 was accessible and that analysis of the 95 data had started. Further improvements could be made by shifted vertex running or additional detectors, provided an interest existed.

The chairman closed the discussion and asked R.Klanner to review the ZEUS upgrades currently planned.

HERA should be congratulated for providing improved background conditions. The ZEUS detector continues to function well although some minor problems exist. The vertex detector (VXD) has 9 of 24 cells not operational. The trigger system is approaching its design rate capabilities and has a dead time of typically $\leq 1\%$. The data acquisition system was significantly changed during the shutdown and has resulted in more efficient and reliable data taking. The CPU power of the third level trigger farm (TLT) is being upgraded. This should double the computing performance by 96.
The detector upgrades made during the last shutdown: beampipe, beampipe calorimeter, forward and rear presamplers (F/RPRES) and repositioning of the rear calorimeter (RCAL); are working well and have closed gaps in Q^2.
A γ tagger ($24.5 \leq E_\gamma \leq 26.5$ GeV) located 8m. downstream is being designed for installation in the next shutdown. A barrel presampler (BPRES) and a forward plug calorimeter (FPLUG) are upgrades planned for 97. The BPRES proposal should be available in Oct.95 for submission to the PRC.
The HERA coordination meeting (25/9/95) will be used to review future accelerator operation. If the 95 data achieve a $\leq 5\%$ measurement of F_2 then ZEUS would favour changing energy in 96 and measuring F_L.
Some worries exist w.r.t. HERA operation. The startup was very slow in 95 and operation is obviously very complex. It is important to ensure that HERA has sufficient resources to operate efficiently. The HERA-B integration remains difficult in that high background rates are seen in the LPS and FNC. A solution to this problem is required.

F.Eisele stated that 2 energy measurements would be marginal for the determination of F_L. R.Klanner agreed but pointed out that a different energy in 96 would allow high luminosity electron running in 97. If the 96 running was not successful then 97 could be used for F_L measurement.

J.Jaros asked what backgrounds were seen without the HERA-B target. It was stated that the first positron fill of a proton fill was quiet. Additional fills gave backgrounds that were too high, 20% of these fills cannot be used by the LPS. A refinement of the methods used by the HERA operator w.r.t. the backgrounds, before the LPS is inserted, is required. Dark currents in the LPS appear to be increasing which suggest radiation damage.

N.Wermes asked why ZEUS placed little emphasis on Si trackers. R.Klanner replied that the existing reconstruction methods were considered to be sufficient for accessing heavy charm physics. Heavy quark spectroscopy is thought to be difficult due to the requirement of selecting a trigger with sufficient selectivity.

The chairman requested that the BPRES be discussed.

M.Derrick stated that a total costing existed. The US collaborators would provide 2/3 of the financing.

L.Foá asked whether sufficient space existed for the installation and asked what the foreseen granularity was. M.Derrick replied that space was available, a wooden mockup had been inserted, and that the scintillator granularity was 20 cm^2.

N.Wermes stated that the OPAL presampler had not significantly improved the energy resolution but that the improved position resolution was useful. R.Klanner added that a single radiation length of coil preceeds the barrel calorimeter (BCAL). The BPRES was intended to improve the understanding of the tails. M.Derrick stated that currently 70% of the BCAL reconstructed jet energy was seen, this would increase with the BPRES.

A.Wagner recalled that the F/RPRES were installed in regions were large amounts of absorber are present. The BPRES is in a region of low absorber. R.Klanner replied that electron identification and the selection of prompt γ events can be expected to improve. Without the BPRES significant loss of cross-section would occur.

The chairman proposed that the BPRES proposal be reviewed at the next PRC.

HERA operation and machine related issues were now discussed.

D.Trines anticipated that the 96 running would be more difficult. The modifictaion to the proton lattice during the long shutdown would, almost certainly, result in a longer startup and consequently a shorter luminosity period.

B.Wiik stated that the high power costs in the winter months force operation over the summer. The proton ring control system upgrade is a priority item. The general manpower resource problems are more difficult to solve in view of the ongoing budget restrictions and planned staff reductions.

R.Klanner observed that the loss of ep luminosity due to additional requirements placed on the HERA operators is substantial, e.g. positioning the beam at the HERMES pretarget collimator reduces the total luminosity by 5%. B.Wiik replied that the machine was still on the learning curve. If no improvements were seen before the end of the year then additional action would be required. R.Felst agreed but suggested that HERMES and H1 should improve their robustness.

A.D.Martin asked whether the HERA-B rollout schedule had any constraints on low energy running. W.Hofmann replied that HERA-B had no energy requirements for 96 although higher energy running would be required in 97.

Closed session

The stable running and good physics output of the collaboration was praised. F.Eisele and D.Saxon both expressed concern about the possible absence of the VXD in 97.

Item 4. Review of H1.

The chairman thanked the open session speaker for his presentations and introduced the new spokesman, R.Eichler.

The experiments technical coordinator, P.Biddulph, reviewed the operation of the detector and the upgrade status.
The initial startup efficiency, 40%, was relatively low due to the high background rates in the tracking chambers, at the start of a luminosity run, and the integration of new components including the upgrade of the trigger.
A short in the solenoid, which occurred at the same time as the HERA quench problem, also resulted in a loss of data. The short has been corrected.
The operating efficiency has dramatically improved to 70-80% by optimizing the trigger and readout and by introducing a new run startup procedure with the HERA operators.
The backgrounds, seen in the H1 detector, originate from synchrotron radiation and showering. This and the background sensitivity to the positron beam horizontal tilt indicate that the beampipe has a kink in it.
Increased background rates are also seen in the forward proton spectrometer (FPS) during HERA-B tests.
The old detector components are working well although the PLUG calorimeter dark currents are increasing. This is probably caused by positrons scattering off the C3 collimator during luminosity tuning.
The new components status is as follows. The central silicon tracker (CST) is 50% installed with 25% of this readout. Hits corresponding to extrapolated tracks from the central jet chamber (CJC) are seen. The backward silicon tracker (BST1) is partially, 8 of 64 cells, installed with 6 trigger pad cells readout. Hits corresponding to tracks have been seen. The full installation of CST and BST1 will be completed during the shutdown. The SPACAL detector is working well and is being calibrated. The R-Z information provided is already used in the trigger. The new backward time-of-flight (BTOF) is working well and is used to veto background events. The BTOF trigger functionality will be replaced by a SPACAL detector in 96. The E-tagger at 44m and Barrel Drift Chamber (BDC) are taking data.
The upgrade plans for 96 foresee a forward neutron calorimeter (FNC) and an extension of the FPS. Additionally all the LAr calorimeter preamplifiers will be replaced with lower noise amplifiers.

L.Foá asked whether there were plans to correct the beampipe kink during the current running period. R.Eichler said that this had been considered but that the improvement in the operating efficiency made such a repair unnecessary.

In response to D.Saxon, it was stated that the Si tracker S/N ratios were 15/1 and 10/1 for the p- and n- sides respectively.

L.Foá observed that a substantial amount of work remained before the new components would be fully functional.

B.Wiik requested a statement concerning the physics plans for 96. R.Eichler could not be specific. The next collaboration meeting would be used to evaluate the requirements and a decision would be available for the HERA scheduling meeting.

A.Wagner observed that 25% of the SPACAL is calibrated and asked when the full calibration would be complete. It was stated that the 25% resulted from half the data sofar analysed.

The chairman asked the referees to report on the FNC proposal.

Referee's report

R.Sosnowski reported that the physics case was convincing. The SPACAL, to be used, already existed at CERN as part of WA89 and the MPI-Heidelberg group responsible would join H1 if the proposal were accepted. Some small modifications to the detector and in the HERA tunnel would be required.

J.Rander asked whether enough space was available to install a veto counter for backscatters. It was stated that this would require 2m and that only 10cm were available.

L.Foá asked whether the calibration method was sufficient. R.Eichler replied that the method used by the ZEUS FNC of pausing whilst ramping the proton beam would be used.

W.Hofmann observed that 8-bit readout was being used and asked whether the dynamic range was sufficient. In reply it was stated that this would be sufficient and that the reuseability of existing hardware was important here.

A.D.Martin asked whether π^0's from $n\pi^0$ reactions could be resolved. R.Sosnowski replied that the granularity was not good enough.

D.Trines asked whether a modification of the machine beampipe would be required. R.Felst stated that this would not be necessary, a modification had already been carried out.

K.Sinram reviewed the installation as seen by the machine. No changes to the beamline are required but the water cooling system of the cavities would require minor modification. The calorimeter would be installed in two halfs. The weight of the bottom half, with its support structure, can be carried by the floor. The top half must be removable to give easy access to the proton beamline. This requires a permanent crane structure attached to the tunnel roof.
An installation in Jan.96 has been tentatively included into the shutdown schedule.

The chairman summarized the committees conclusions. The clear physics case, the existing calorimeter and additional manpower and the straight forward installation allowed the committee to recommend that the proposal be accepted.

The proposed extension to the FPS was now discussed. The first measurements taken with the two existing vertical stations are reviewed in PRC 95/03. The performance seen is close to that outlined in the original proposal. The installation of two additional horizontal Roman pots is requested. These would be instrumented with scintillator initially.

N.Wermes reported that the additional stations would increase the mass acceptance for physics events and would allow more detailed background studies to be made. The instrumentation was a problem, only the scintillator option is available. Pixel or MWPC readout cannot be provided in the time available.

In reply to D.Trines, W.Bartel stated that enough manpower was available for the installation.

L.Foá asked whether there were any implications for the machine. B.Wiik replied that all beampipe related installations would be sensitive to the activities of HERA-B.

P.Söding observed that no alternatives were available for instrumenting the detector. Scintillator was the only option and in the long term this may not be the most sensible choice.

R.Sosnowski thought it advisable to delay a decision until the next PRC. The physics case is good but that the data from the existing installation should be looked at in more detail.

W.Hofmann pointed out that the installation request is only for the Roman pots, i.e. just the mechanical holder. In view of this a referral to the next PRC would delay the installation until the next shutdown.

B.Wiik asked whether the FPS group was large enough to analyse and build the additional pots at the same time. F.Eisele stated that the group was large enough and was already committed to doing both.

N.Wermes expressed a wish to see more Monte Carlo results. Many issues have not been addressed and he would recommend that the PRC wait for more detailed information.

D.Trines stated that the machine group were prepared and that the H1 group are responsible for building the mechanical parts required.

The chairman concluded the FPS discussion by stating that the committee recomends postponing the decision. The FPS group would be asked to return at the next PRC and present more detailed analysis of the data taken, with the existing two pots, and a the results of Monte Carlo simulations of the performance of the new system.

Item 5. Review of HERMES.

The chairman thanked the HERMES open session speaker and asked the referee, D.Saxon, to present his report.

Referee's report

The experiment has now entered the measurement phase and the committee should congratulate the experiment.
The 95 running with a He^3 target forsees 15M triggers at $< P_l > \geq 50\%$. Whereby the data quality depends on $N_{events}.P_{e+}{}^2.P_{target}{}^2$. The operation of the HERMES target reduces the ep luminosity by 15% (electron current decay time and tuning). Emphasis should therefore be placed on increasing the mean positron polarization.
The subdetectors with the exception of the vertex MSGCs are working well. The MSGC problem is related to the readout electronics and it is hoped that a new production batch will solve the problem for 96. A backup solution is being studied. The impact of the vertex chamber problem on the 95 physics capabilities is small.
The conflicts between HERMES and the collider experiments, H1 and ZEUS, have to be addressed. Dedicated studies may be required as well as actions during the shutdown.

B.Wiik stated that the committee should consider defining an acceptable compromise between the requirements of HERMES and those of the collider experiments.

J.van den Brand observed that the SLAC experiment E154 was now receiving improved beam. The electron polarization had been doubled to 80% and the energy had increased from 30 to 50 GeV. The 12.7M HERMES events targeted will have better high and low x contributions than E142 and E143 but may be worse in the mid x range.

D.Trines stated that the background optimization at H1, HERA-B and ZEUS had resulted in lower polarization.

A.D.Martin asked how long it would take to analyse the data. It was stated that a goal of three months had been set.

B.Wiik pointed out that E154 would collect four times more data than E142.

A.Wagner stated that a reanalysis of E142 is thought to have improved the original result. F.Eisele believed that the SMC F_2 results had been used to reduce the errors. J.van den Brand thought that this was unlikely to help in view of the QCD corrections required.

R.Felst returned to the conflict between HERMES and collider experiments. A possible increase in target density would reduce the ep luminosity seen.

B.Wiik added that the tuning time required for HERMES was also a cause of lost luminosity. The polarization tuning must be given high priority and presumably will improve with more experience. In the interim the HERA-HERMES communication should be improved.

J.van den Brand now presented the detector status. The RICH proposal would not be continued with at present. The physics case is not overwhelming and more time will be taken looking at other technologies.
The P_T polarimeter task group have made minor modifications to the apparatus and have an improved understanding of the measurement error, $\delta P_T/P_T \sim 3\%$ is anticipated. Penn and Freiburg universities are now working with the DESY groups on the P_L polarimeter. The original proposal has been simplified and a multiphoton technique will be used. Work on the P_L beamline is progressing and the laser has been ordered. The detector prototype is currently being tested at CERN and it is intended to install the polarimeter during the next shutdown.
The vertex detector readout chip has been delayed due to poor yield (2%). The detector is currently instrumented with the old chips.
Fringe fields from the spectrometer magnet are seen to effect the gain of the Lead glass calorimeter's photomultipliers. Additional shielding is being considered.
The TRD is sensitive to synchrotron radiation backgrounds. Consequently 40 μm of lead has been inserted. Ideally more lead is required but this increases the multiple scattering. The TRD also sees backgrounds apparently related to the ZEUS magnets. This effect has to be understood.
The HERMES detector can operate if $I_{e+} \leq 30$ mA. In view of the 50 mA. planned for 96, some work is required.

Item 6. Review of HERA-B.

The chairman thanked the open session speaker for his presentation and asked the referees for their report.

Referees's report

J.Jaros stated that the two outstanding HERA-B/machine interfacing problems have

been solved, pending final tests. The electron beam can now be shielded from the dipole field and the vertex detector tank impedance problem is now removed by using a slotted 50μm thin aluminium sleeve. A half scale model of the later will be tested in Naples and a solid sleeve backup solution will also be prepared.
The MSGSs and RICH subdetectors remain critical items.
The DAQ system has been significantly changed. The leadership issue is being resolved and a modular hardware solution is emerging around the SHARC board.
The magnet and other infrastructure items are now on schedule.

M.Medinnis presented a detailed review of the subdetector status. A fullsize prototype of the MSGC is being constructed and the time schedule foresees installing the prototype chamber into the experiment early in 96. Ageing studies are being carried out, whereby the difficulty remains the assessment of longterm ageing effects. Lab tests of the charge accumulation rates indicate that the chambers will function well in the HERA environment. No final solutions exist for the readout system although a number of options are being tested.
Progress on the RICH subdetector has been slower than anticipated. A decision between TMAE or CsI is expected in October. Ageing tests indicate that the photon detector lifetime, in the hottest region, might survive one year of operation. The lower photon yield is still not understood. Insufficient manpower and uncertainties in the funding are major concerns.
The effect of the vertex tank RF shield has been studied. The effect on the physics capabilities is minimal and the background rate remains essentially the same.

B.Wiik asked whether new sources of manpower were anticipated for the RICH. It was stated that interest existed in a number of groups (Austin, Houston, Hamburg, North Western, Bruckhaven and Yale). The US groups, however, have so far not been funded.

B.Wiik inquired whether there was a fallback solution if the additional groups failed to receive funding. W.Hofmann replied that money was required for production, a funding delay of one year could be accepted.

J.Jaros made the following comments to the subdetector presentation. The MSGC effort has been strengthened by the Zurich group joining. Experience demonstrates that MSGCs are delicate objects and although the rate tests look good there remains the long term ageing concern. The original schedule showed mass production in 96, now the prototype test will be done. A real backup solution must therefore be considered.
There has been no convergence of the understanding of photon yield or ageing effects in the RICH. The margin of safety has gone and the production schedule is now tight. TMAE or CsI should be decided on and the manpower concentrated. The US funding situation is also very difficult. As with the MSGCs, a backup is required.
The backgrounds to other HERA experiments must also be addressed. A task force should be formed.
The project and software coordinators must also be defined.

A.Schwarz agreed with the statements made. The software production has been centered at Zeuthen where analysis and Monte Carlo frameworks exist. A beta release of user software will soon be made available. The worries concerning conflicts with other experiments is understandable and possibly a task force is required.

F.Eisele commented that the MSGC work is proceeding under the assumption that this is the final solution and production plans are being made. A break point exists in Oct.95 where a decision about a backup solution can be made.

Item 7. Neutrino Astrophysics at Zeuthen.

C.Spiering presented a general review of large scale astrophysics neutrino experimentation with particular emphasis on the Baikal and AMANDA experiments. Zeuthen is a collaborating member of the Baikal experiment. AMANDA is currently in the design phase and the Zeuthen group is participating in the feasibility studies. The design phase will be finished in April 96 allowing a proposal to be made in the summer. At this time the PRC will name referees and a report will be made to the committee.

Item 8. Report on the Linear Collider Project.

M.Leenen reported on the status of TESLA and S-band linear accelerator design projects. Both projects were visited by the committee.

The committee was impressed by the work and progress being made in the field.

B.Wiik stated that ECFA will initiate, with DESY, a study of detectors. A first draft of the conceptual design report is due at the end of 96.

Item 9. Miscellaneous.

The chairman announced that R.-D.Heuer, R.Sosnowski and W.Hofmann had completed their periods as PRC members. They were warmly thanked for their contributions.

The next PRC meetings have been scheduled for: 16-17th Jan. 96, 10-11th Jun. 96 and 7-8th Oct. 96.

(C.Youngman - 14th November 1995)