Draft minutes of the 26th TEDCOM Meeting held at GFZ, Potsdam on 23rd and 24th May 2000

Summary of TEDCOM Recommendations to SCICOM

TEDCOM RECOMMENDATION # 001-1
Following the excellent progress on the AHC installation and monitoring of its effectiveness TEDCOM request that SCICOM ensure that ODP-TAMU proceed quickly with the simulation studies which can now use real data. This is required in order to build a model, analyze existing observations, predict what may happen in different geological and geographical areas and allow unexplained or aberrant behaviour when using the AHC to be analyzed.

TEDCOM RECOMMENDATION # 001-2
TEDCOM request that SCICOM take steps to ensure immediate collaboration between ODP-TAMU and the BRG of LDEO in order that their combined expertise be pooled to provide a comprehensive package of down hole and rig floor instrumentation for upcoming Leg 193 and any future sensor developments. If necessary both should prioritize their objectives and should be supported with funding if necessary in order that the studies shown by both parties at the current meeting be properly harnessed for effective use by the programme.

TEDCOM RECOMMENDATION # 001-3
TEDCOM request that SCICOM ask ODP-TAMU to review their approach to poor core recovery in unconsolidated, non-cohesive sediments and when doing so bear in mind existing tools available in the geotechnical industry together with ones currently under development.

TEDCOM RECOMMENDATION # 001-4
TEDCOM request SCICOM to ensure that, before the end of the current programme, ODP-TAMU have an up-to-date inventory of all of their existing operational tools, that each has a folio of up-to-date drawings and an operational manual together with a digital copy of the information in a commonly available format. This is probably the best legacy that engineering can give to the IODP and it should therefore be a requirement that the Borehole Research Group at LDEO also comply with regard to all downhole logging tools and associated software.

Those present:
Members:

Dieter Eickelberg (Germany)	Hugh L Elkins (USA)	Sergio Persoglia (ESF)
Frank Schuh (USA)	Earl Shanks (USA)	Howard Shatto (USA)
Alister Skinner (UK, Chair)	Shinichi Takagawa (Japan)	Brian Taylor (Aus/Can/Pacrim)

Apologies from:

Marvin Gearhart (USA)	Walter Svendsen (USA)

Guests/Liaisons:

Helmut Beiersdorf (Germany, EXCOM Chair)	John Farrell (USA, Acting Director, JOI-ODP)
Jeff Fox (USA, Director, ODP-TAMU	Mike Friedrichs(USA, ODP-TAMU)
David Goldberg (USA, LDEO)	Ulrich Harms(Germany, GFZ)
William W. Hay (Germany, SCICOM Chair)	Yoshiro Miki (Japan, JAMSTEC)
Dennis Nielson (USA, DOSSEC)	Lothar Wohlgemuth (Germany, GFZ)
Eddie L. Wright (USA, ODP-TAMU)	

Apologies from:

Tom Janacek (USA, SCIMP Chair)	Brian Jonasson (USA, ODP-TAMU)

Opening Remarks:
Skinner opened the meeting by thanking Ulrich Harms on behalf GFZ for agreeing to host this meeting and for making arrangements for the meeting.
Bill Hay commented briefly on why SCICOM had agreed to TEDCOM holding a meeting in Potsdam, the centre for the International Continental Drilling Programme (ICDP). ODP are making preparations for the successor programme IODP in co-operation with a number of other committees being set up under an International Working Group (IWG). The new programme will involve two ships and other platforms so there is good reason to make close links with ICDP who already use various platforms and technologies. Such an exchange of technology and ideas will make for better facilities for scientific drilling of the future within broadly similar but separate Advisory Systems for specific programmes.

John Farrell explained the relationship of ODP to JOI. JOI is the main contractor for the Ocean Drilling Programme and he is presently the Acting Director in a transition period. In due course a modified structure approved by the JOI Board of Governors and the National Science Foundation will emerge but JOI will still manage ODP and the ODP Budget of $46m which is divided among the sub-contractors TAMU/LDEO/JOI/JOIDES.
Within the USA there is a long term planning undertaken by the US Science Support Programme (USSSP) which is looking after the transition from ODP to IODP. The present ODP science operations with the ship will end in 2003 but there will be a wind-down period for all other activities. There will not be a gap between programmes but there will be a gap in drilling operations.
The JOIDES Office will move from Germany to USA (Miami) this year and Chris Harrison will be EXCOM Chair and Kier Becker SCICOM Chair.
A Request For Purchase (RFP) for the 'IODP' programme will be formulated in 2002. In the meantime an International Working Group Support Office (IWGSO) has been set up and sponsored by STA and JAMSTEC in Japan and JOI in USA. Details can be found on www.iodp.org.iwgso@brook.edu

Agenda Items
A draft agenda was prepared and accepted. It is attached as Annex 1. The numbering which follows ties in with the agenda topics.

1. Apologies for Absence
Apologies were received from Members and Guests/Liaisons as shown above.

2. Approval of 25th TEDCOM Final Draft Minutes
The Final Draft Minutes plus Annexes mailed after the 25th TEDCOM meeting at College Station were approved. Skinner said that he would try to continue mailing a complete set of attachments with the finally agreed draft minutes to those attending plus absent members, alternate members and liaisons.

3. Report on Activities at TAMU
Mike Friedrichs commenced with an update on the Active Heave Compensation System (AHC). There is attachments as Annex 2 which cover the main points of his talk. Instrumentation placed on the rig allowed for data gathering with the AHC system active and passive. This data presented in graphical form shows clearly the potential of the AHC to allow for more efficient and controlled coring on board the JOIDES Resolution. The heave compensation efficiency (relative to vessel heave) has been increased to above 95% and above 98% has been achieved. Virtually stable RPM (within 10 RPM) and no lifting off bottom of the bit while coring or drilling has been achieved. To date there has not been good correlation with hook load but there are other factors here including passive compensator efficiency and length of compensator ram extended.

These tests were carried out in approximately 2500m water depth with the drill string extended to around 300m below sea floor.
Howard Shatto asked if the data had been used for simulation yet but Friedrichs stated that to date he has not had time to do any simulations. However it was hoped that these could be completed by September of this year.
After congratulating ODP-TAMU on an excellent achievement with the AHC discussion centred around certain aspects of the as yet limited data and operations. It was fully understood and agreed that data gathering and simulation needs to continue in order to develop models and understanding of what is happening and that for proper comparisons this will have to be made in different boreholes, geographical areas and using different drilling/coring parameters. **(See TEDCOM Recommendation #001-1).**
Two major points became evident after questions from Hugh Elkins, Helmut Beiersdorf and John Farrell :

1. The AHC can only be used up to certain weather conditions - after that it becomes too dangerous on the drill floor because of the high speed movement of heavy masses.
2. 'Proper' drilling techniques have to be used in order to properly control the AHC and the drilling parameters. Thus the air cannot be bled out of the compensator as a method of feeding the drill string; the brake must be released and the traveling block lowered in that manner.

The first point will be one which will require some thought by the Co-Chiefs as it will impinge on operations, core quality and other factors. However it is generally known that operations in bad weather with or without active heave compensation will produce less, and poorer quality, core and less stable boreholes.

Eddie Wright then summarized the rest of the ODP-TAMU activities and all the information is contained in Annex 2.
He highlighted features in the **Leg summaries** and **Upcoming Leg Planning**, all of which are documented in the Annex. Clearly ODP legs are becoming more ambitious in the pursuit of science and are requiring more engineer time on board the vessel in order to prepare and maintain the tools.
In this context Wright mentioned that there is a trend towards leg specific engineering and staffing to cope with this.
All existing **ODP-TAMU Engineering Projects** together with timelines are documented in Annex 2.
Mention was also made of having to prepare items for third party tools, including the HYACE tool - this is covered by the demonstration and discussion reported on later in the minutes.
Leg 193 may have a full sensor monitoring system and this needs to be linked in to the work done by Goldberg's group. It should not be done in isolation.
Discussion on tools, measuring systems and data acquisition systems ensued and clarification was sought on various points. Clearly there was a lot of work and limited engineering effort available. This will be referred to again under the minutes of the closed session.
The **Passive Heave Compensator** low friction seals are leaking. There may be a need to resolve this. There may not be a problem or there may be a solution to reduce the leakage if the seals are wearing too fast. Elkins reported that contamination in the recent oil analyses may be due to dockyard activities and could settle down. In any event a replacement set of seals is being manufactured and will be on standby if required. It is certainly something which can be left for the time being as long as it is monitored.
The load pins on the Compensator Block which are manufactured by TOTCO are not working well. They are essential to good rig floor instrumentation and are being repaired again.
The **Rig Instrumentation System**, documented in Annex 2 is working well and a variety of rig information can be recorded. In addition alarms can be set and can be at different settings for different 'stations'. Skinner asked if there were any plans to integrate relevant data with the geological archive but there is not at present although the data is compatible with the JANUS system.
The **Hard Rock Re-Entry System** report is in Annex 2. If the offshore trials are successful the tool can be further developed to ream out ADCB holes and to emplace deeper casings using a top and bottom hammer on the casings.

The **Advanced Diamond Core Barrel (ADCB)** is also reported on in Annex 2. This mining type core barrel can be further developed with a triple tube coring system and a shut-off valve for detecting core blockage. Questions were asked about the actual RPM which could be deployed via the API drill string for the diamond coring and it was generally accepted that they would be lower than desired but probably acceptable.

4. Report on Activities at BRG (LDEO)

Dave Goldberg gave his presentation immediately after Mike Friedrichs as it complemented the active heave data. Annex 3 has details. The Borehole Research Group (BRG) had run a drill string acceleration tool six times on different core barrels during leg 185. They would hope to continue these experiments on leg 191 and other legs and possibly also add a drill string acceleration tool to the top of the drill string. A similar temperature probe tool could be accommodated with the core barrel and this would be important if running commercial LWD or MWD tools in 'hot' scientific areas.

During Leg 188, logging while drilling and downhole WOB via MWD mud pulse worked (first time!!) despite the deep water and the fact that only sea water was being used as the drilling fluid. It was also hoped to run a similar experiment to the Leg 185 coring system tests using this MWD sub and the AHC switched on and off for comparison purposes but this comparison was not possible due to problems with the AHC on that leg.

In general the data collected showed a good similarity with that obtained with subsequent instrumentation and recording of AHC activity which suggests that, under controlled conditions, it may be possible to calibrate downhole with instrumentation on the rig floor.

Frank Schuh, John Farrell and Eddie Wright led the questioning on the mud-pulsing parameters and instrumentation sensors. It was agreed that the measurement of RPM would be important and Goldberg thought that some form of acceleration sensor could possibly be incorporated to do that.

It was agreed that the comparison of rig floor and downhole was significant and should be further monitored to see if a direct or calibrated relationship could be determined. This would allow a whole new monitoring from the rig floor given the new rig instrumentation system. TEDCOM felt that the experiments intended for leg 188 should be conducted at the next suitable opportunity in order to pursue this. They also felt that ODP-TAMU and BRG should work much more closely together in order that joint experiments and data gathering be made to enhance the valuable data obtained from both. **(See TEDCOM Recommendation #001-2).**

5. Report on OD21 Activities

Shinichi Takagawa gave an update on the status of the OD 21 Project. He stated that the contract for the build will be with Mitshubishi Heavy Industries and the hull will be built by Mitsui. Design work had commenced and the cutting of steel would commence soon. A project timeplan, contained in Annex 4 indicated that completion of construction is scheduled for the first half of the Japanese Fiscal year 2004. Outline particulars give a vessel length of 210m, width of 38m and a height from keel to top of derrick (Crown Mount Compensator) of 116m. Draft is designed as 9.2m with thrusters retracted.

There will be four laboratory decks including the roof deck where the core will come off the rig floor. Vibration issues from logging winches and other machinery are being addressed. Accommodation is planned for 150 persons in large single rooms x7, standard single rooms x121 and twin rooms x11. A typical single room will have a floor area of 10sq.m. and be 2.4m high.

A dual derrick capacity will be installed but will not be fully implemented in the first stage.

The vessel will not be able to cope with Bridges and Canals in similar fashion to JOIDES Resolution.

6. Technological Development Projects for the ICDP

Ulrich Harms gave a short introduction to the International Continental Drilling Project (ICDP) by way of introduction to the next two speakers. Dr Emmermann who was unavailable at this time will give the full presentation of ICDP and GFZ later.

The annual budget of the ICDP is 700,000 USD. The programme is proposal driven, has no centralized equipment and small organizational groups. GFZ is the executive committee centre and has an organizational support group of five persons. GFZ also hold logging and testing tools which were originally developed for the KTB borehole in Germany.
Lothar Wohlgemuth outlined the operational support given to many different scientific drilling targets in diverse places such as Lake Baikal in Russia, Hawaii deep drilling and San Andreas fault targets in USA, Chixilub Crater in Mexico or Dabie-Sulu in China.
Within a small budget and huge scientific requirements very notable achievements have been made including:
Coring and drilling with often small diameters to 5km depth
Obtaining high quality core and oriented core
Using directional drilling
Making borehole measurements in different diameter boreholes
Conducting hydraulic and other in-situ tests
Ensuring good quality data and information management

New tools have been designed in order to carry out the work and include a special top drive system which will fit on different 'rigs of opportunity', special drill strings, logging tools and drilling information systems. A special pump down packer system which is wireline retrievable is also used and can be applied in horizontal holes also - again wireline retrievable by a pump-down overshot tool. Logging tools able to withstand temperatures of up to 250 degrees C are also available but most of the logging tools are only suitable to 150 degrees C with slimhole tools suitable for up to 70 degrees C being planned for 2001. For these slimhole tools the maximum tool diameter is 52mm and the minimum hole size is 90mm.
The data management system includes digital core photographs and it is PC-based with information available via the web.
Consult http://icdp.gfz-potsdam.de for more details. Brochures were also available at the meeting and key details are attached in Annex 5.
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7. Portable Drilling Rig for ICDP

Dennis Nielson, the Chief Executive of DOSECC outlined the facilities available to ICDP through his facility based in Salt Lake City, USA. They have a hybrid coring system utilizing drilling rigs of opportunity plus a special diamond coring top drive system which can be 'inserted' for coring operations with a variety of drill strings. Details were circulated (see Annex 5). This system has cored to 14500' in Hawaii in one Scientific programme and has also used 'H' size mining string to 9,800' and to 10,201' on Hawaii. It will try to achieve 18,000' with 'H' string in Hawaii.
Such drilling and coring depths without recourse to heavy duty drilling equipment is a major achievement. While the above drilling has been in hard rock the PAGES community are now showing interest for laccustrine areas where good climatic records can be obtained. Various transects have been proposed by PAGES (PEP1-PEP3) together with IMAGES who have interests in the Oceans and Arctic/Antarctic. Other configurations of rigs are required for this.
For Lake Drilling DOSECC have proposed a Lake Drilling System the GLAD 800. It is a standard rig transported in 20' ISO containers which are then converted into the barge for deployment. Eight containers are used to make the barge with open space in the centre to form the moonpool. Flotation plus ballast are put in the containers which are floated upside down for rig floor strength.
Trials will be conducted in Great Salt Lake and Bear Lake this fall and it is anticipated that the rig will be able to operate with a 16,000 line pull as modified for the barge set-up.

Some sceptism and doubts were expressed as to the suitability of the system for offshore operations, even on relatively calm lakes. Equally some felt that the system, 'cheap and cheerful' as it was would work. It again emphasizes that there is more than one way to tackle a scientific coring target.

8. Presentation of Downhole Technologies - Baker Hughes Inteq

Aeint Picksack of Baker Hughes Inteq gave a presentation on various downhole tools including the wireline retrievable directional and gamma tool the 'navigamma' and downhole motor coring tools, oriented coring and pressure coring tools. A full presentation of his talk has been made on a CD-rom and the overheads will be prepared for the minutes as Annex 6. Aeint stressed that it was only with the co-operation of scientific drilling that such tools can be easily developed as this allows the necessary research and testing time to complete the tool development. Many of the items which he described had their first 'outings' in the KTB scientific drilling in Germany.

The day finished with a short tour around the historic GFZ campus and a view of some of the buildings in which many early scientific experiments and observations were carried out. This was followed by a reception hosted by Professor Rolf Emmermann Executive Director of GFZ and Head of the ICDP in Potsdam.

9. Introduction to the International Continental Drilling Programme (ICDP)

Professor Rolf Emmermann presented the background to ICDP and the method of choosing sites for drilling. If a letter proposal is accepted by the executive committee then a workshop is convened. This precedes any other activities. Next the best place and persons are picked to take the project forward. The scientists picked need not necessarily be from member ICDP countries but will be the best for the job in hand. Communication is by ICDP Newsletters and their Website.

Many of the scientific objectives and themes of the ICDP are closely aligned to the ODP. A Scientific Rationale Document prepared for the case for establishment of the ICDP was produced in1993 and contains many similarities to various ODP Long Range Plans.

10. A TEDCOM insight into an ODP Leg

Brian Taylor, the new TEDCOM member for the Can/Aus/Pacrim consortia sailed on ODP Leg 188. Skinner asked him at short notice for his comments or views on that leg. Brian, who comes from a geotechnical drilling background, agreed that he did not have much time to think about this but said that he had two comments to make.

The first was that it seemed difficult to find the sea bed with the drill string and that the discrepancy between echo sounder water depth and drill string length allowed the APC to be activated a number of times before seabed was reached. There was some discussion that this was 'not the norm' but ODP-TAMU said that they should have the data to check how often this occurred. If it is a common occurrence Brian suggests that some from of acoustic sensor be used to check drill string proximity to seabed before firing the first APC.

The second comment was that on one occasion, in difficult ground and weather conditions, no core was being recovered and there was no option but to drill further to try and obtain some. He suggested that a wireline activated hammer sampler, a common tool in the geotechnical industry, would have obtained a sample without drilling unnecessarily and would have helped the scientists make a decision on what to do next. Skinner said that this has been suggested a number of times at TEDCOM meetings by those familiar with the technique but that it has never been taken up by ODP-TAMU. **(See TEDCOM Recommendation # 001-3)**

11. New members for TEDCOM

Skinner reported that the debate regarding the list of potential US members for TEDCOM, which took place at the 25th TEDCOM, had allowed him to correspond with USSAC and put forward some names for their consideration. Using the names put forward and confirmed as being willing to stand, together with the background information provided allowed USSAC to propose four names to their members. Joe Castleberry of Fugro and Keith Morton of Chevron were clear favourites and John Farrell of JOI has agreed that both can be asked to join TEDCOM. Joe has a geotechnical background and Keith works with former TEDCOM member Alex Summerour on deepwater engineering problems.

Dieter Eickelberg announced that Germany will be providing a new member for TEDCOM and that he is standing down. He enjoyed his period with TEDCOM and hoped that he could keep in touch. Skinner thanked him for all his work on behalf of TEDCOM and hoped that he would continue to act, along with Ted Burgoyne, as our liaison to IPSC.

Skinner asked Harms if ICDP-GFZ would be interested in providing a liaison to TEDCOM and was told that they would. Skinner will confirm with SCICOM that this is in order and report back to Harms.

Bill Hay said that he would look into whether China would be eligible to send someone and asked about France. Skinner said that he thought that France was not allowed a TEDCOM Member due to their reduced subscription. In any event France could be asked if they wished to send a guest to the meeting and this will be looked into.

12. IPSC - an update

Dieter Eickelberg then gave a summary of the work of IPSC the sub-committee of the IODP IWG.
Five meetings have been held so far and good progress has been made. Input to the Conceptual Design Committee (CDC) has been completed and a report has been provided together with a Management Report. Brian Taylor had done some consultancy work for CDC.

Dieter also reported that Ted Burgoyne is heading a technical sub-committee of IPSC and that John Armentrout is also doing some consultancy work for them.

Skinner reported that, regarding the CDC a report in its draft form is now out to review and comments are encouraged. The details can be found on the web at
http://www.joi-odp.org/USSSP/cdc/default.html (this is a word version) or
http://www.joi-odp.org/USSSP/cdc/cdcreportfinal.pdf (this is in PDF format)

There is also a comment form for your comments and this should be returned to IPSC at ipsc@umich.edu

13. A.O.B.

There was no other business proposed and following agreement on item 14 Skinner requested a closed session for TEDCOM Members.

14. Date and venue for next meeting

This has been proposed for College Station on 28th and 29th November 2000, Jeff Fox to confirm this is possible in due course.

The meeting then adjourned for closed session after Skinner thanked Uli Harms for his very efficient organization and helpfulness in hosting the meeting.
A Closed Session was called in order to discuss the workload and priorities of ODP-TAMU as there was clearly many more projects listed by them than it was possible to complete up to the end of the programme. In addition SCICOM requested some prioritization and guidance on what could be taken forward to the new programme.

As a preamble to the above the overall meeting was reviewed with the aim of deciding how to transfer technology to the new programme and ensure that as much of the tools and developments currently scheduled could be realistically completed before the end of the programme.

It was already clear to members that IODP would be different with separate operators, most likely separate management and different platforms and requirements. That said it was equally clear that there should be a common thread to development so as not to re-invent the wheel.

The project list proposed by ODP-TAMU could not realistically be expected to be completed by the end of the programme and it was likely that the funding for it would not be available anyway. Given the fact that ODP-TAMU had themselves said that there was now even more of a requirement for engineering personnel to sail on legs this will reduce the manpower even more when it comes to tool development and completion.

However TEDCOM were unwilling to pre-judge what ODP-TAMU felt to be achievable and, instead of arbitrarily cutting projects made recommendations based on the following parameters.
1. ODP-TAMU's greatest Legacy to a new programme will be the proper documentation of all existing tools and an inventory of Manuals, Drawings and Operational Parameters. This must be a priority from now and be fully completed by the end of the programme. In discussion it was clear that this is true for any engineering aspects of ODP and thus would also apply to BRG and shipboard laboratory equipment which has been specially adapted. **(See TEDCOM Recommendation #001-4).**
2. ODP-TAMU should not continue with any development which they can not be reasonably sure of completing by October 2002.
3. Even within the above the project load must be achievable else it will have to be further modified rather than have the timeline extended.
4. Any tools required for science legs after 2002, and still not developed should come back for review by TEDCOM.
5. Various items mentioned in the Project Planning or reporting to TEDCOM have already been stated by TEDCOM to be long term objectives beyond this programme and its funding. Even if they are there 'for completeness' they should be dropped. Examples are the Retractable Core Bit for the ADCB and Real-time Downhole Sensors.
6. Items such as the Sonic Core Monitor, on the development list for many years, is unlikely to succeed in coming to completion in the little time remaining and should thus be dropped now to save engineering time for other, more achievable gain.
7. If projects can be joint funded with external monies then those projects must be considered separately.
8. ODP-TAMU and the BRG at LDEO must liaise closely on downhole and drill string instrumentation for monitoring and must share their knowledge and expertise in order to save personnel time in short supply by both parties as well as achieve results at less expense to the programme. It is clear that by working together much can be achieved quickly and be put to use within the remainder of the programme.

Some of the above are embedded in the recommendations made at the beginning of the minutes and all were explained and discussed with the ODP-TAMU, BRG and SCICOM representatives before the meeting closed.

15. HYACE - Demonstration and Discussion

TEDCOM and Guests/Liaisons then trained to Clausthal for a briefing and a demonstration of the HYACE coring tool which is of interest to ODP for the collection of Gas Hydrates at 'in-situ' pressure and temperature. The tools have been designed with ODP use in mind.

A briefing was given by Professor Amann of the Technical University of Berlin who is the co-ordinator of the project and by Professor Marx, recently retired Head of the facility at the Technical University of Clausthal which carried out much of the design work and fabrication of the HYACE tool. Skinner is also a member of the HYACE development team.
Some details are contained in Annex 7. Full details of HYACE (Gas **HY**drate **A**utoclave **C**oring **E**quipment System) can be found on the HYACE homepage http:/www.tu-berlin.de/fb10/mat/HYACE.html.

Two demonstrations were prepared and executed. One using the push/percussion tool and the other using the downhole rotary tool. Both successfully recovered good core. More detail is contained in Annex 7 prepared by Skinner for the Funding Partners. The extension of their use into other ODP coring activities (i.e. using the tools without autoclave but with ordinary core barrels) was also commented on.

Discussion with TEDCOM and Liaisons/Guests centered around the design of the tool, observations of the test and operations within ODP. It was stressed that the tool was entirely compatible with ODP APC/XCB BHA's and was actually being tested in a mock-up ODP BHA, complete with flapper valve and landing/locking ring in the test shaft. The fishing neck on the tool is also compatible with the ODP wireline so great care has been taken to ensure compatibility with the other ODP wireline tools in the same BHA.

Certification of the lab transfer chamber (LTC) which will accept the core upon reaching deck has commenced and it is anticipated that it will be completed in June. A prototype multi-sensor logger similar to the existing GEOTEK one is also under construction.
The autoclave can be pre-filled with water or inert fluid prior to sampling to ensure it is free of contamination. The motor presently blocks off all fluid passage upon full stoke but this can, and should, be modified before actual borehole use.
The G-forces on landing can affect the shear pins and the instrument sensor package but tests will be made to ensure that these are within acceptable limits.

Tool make-up and operation is now being reviewed and an operations manual is being prepared. Mike Storms of ODP will visit in mid-June and discuss some of the fine tuning of this.

Discussion then turned to an operational test on board the JOIDES Resolution. Leg 191 had been proposed by ODP but a review of the geology suggests that it may not give the tool a fair trial due to the presence of chert. Additionally a long period would have to be spent at sea for a short test of 50 consecutive hours in an already crowded (with engineering tests) schedule.
Leg 194 offers a better possibility for a trial with less offshore time for personnel and a similar number of test hours spread over a number of days, fitting in with the science and using 'end of borehole' time so as not to jeopardize the science of the borehole. SCICOM will make contact with the co-chiefs to see if this can be accommodated. Leg 195 could also be considered on the same basis but this pushes a test even further back and also closer to the actual upcoming gas hydrate leg where it is hoped to utilize the tool for science.

Annex 1

Contact List
Agenda for Meeting

26th ODP TEDCOM Meeting, May 22-23 2000
Hosted by GeoForschungs Zentrum, Potsdam, Germany

Agenda
Monday 22nd May
Opening remarks

1. Apologies for Absence

2. Approval of Final draft 25th TEDCOM Minutes

3. Report on Activities at TAMU - Eddie Wright and Mike Freidrichs
   - Status of Active Heave Compensator
   - Status and results of shipboard monitoring systems for drilling operations
   - Status of Tool Development for upcoming legs
   - Status of Downhole Tool Developments
   - Upcoming Legs - Equipment/Development summaries

4. Report on Activities at BRG (LDEO) and shipboard - Dave Goldberg

5. Report on OD21 Activities - Shinichi Takagawa.

6. Technological Development Projects for the ICDP - Joern Lauterjung

7. Portable Drilling Rig for ICDP - Dennis Nielson

8. Presentation of Downhole Motor Technologies - Baker Hughes Inc.

Tuesday 23rd May
9. Introduction to the International Continental Drilling Project - Ralf Emmermann

10. A TEDCOM insight into an ODP Leg - Brian Taylor

11. New Members for TEDCOM

12. IPSC - an update - Dieter Eickelberg

13. A.O.B.

14. Date and venue for next meeting

Closed Session

Late Afternoon - May 23 - Travel to Clausthal by train

Wednesday 24th May
HYACE Briefing and Demonstration of operation
Hosted by the Technical University of Clausthal, Institute of Petroleum Engineering

15. HYACE - Discussion and demonstration

26th TEDCOM - Final Draft of Minutes - Annex 1

Annex 2

ODP-TAMU Information

The most complete summary from all information e-mailed, mailed and presented has been compiled for this Annex and presented in agenda order. It is not a complete set of all documents issued. The AHC Dry Dock Report is not included as it was e-mailed to all members and contains figures which do not copy well. It was largely summarized in the 25th TEDCOM report attachments.

Active Heave Compensation
Leg summaries
Advanced Cork Installation Leg 196
Timetable for Engineering Projects
Passive Compensator Seals
Rig Instrumentation System
Hard Rock Re-entry System
Advanced Diamond Core barrel

Annex 3

LDEO-BRG Information

Annex 4

OD21 Information

Basic Design Specification of OD21 Riser Drillship
Japan Marine Science and Technology Center (JAMSTEC)

I Basic Design Philosophy

The OD21 Riser Drillship is a vessel to be operated under the
Integrated Ocean Drilling Program (IODP) for promoting the Earth Sciences such as Earth's Environmental Change Process and Solid Earth Change Process.
The basic design and the construction of this vessel shall be so carried out that the vessel becomes the most advanced and the most high-performance scientific ocean drilling vessel in the world, reflecting various recommendations and requirement of various international workshops, conferences and/or hearings, and by collaboration with international technical experts.

II Fundamental Capabilities of the Riser Drillship

(1) The drillship should be capable of cruising and drilling worldwide except for ice-covered sea.
(2) The drillship should be capable of operating long duration and be capable of storing enough materials for long voyages (drilling legs). Fuel, food, and other consumables can be supplied during a leg by support vessel if necessary.
(3) The drillship is a mono-hull type ship, and should have superior manoeuverability, stability, position keeping capability, and motion characteristics in order that effective and safe drilling operation and research can be performed on board.
(4) Drilling capability of the drillship should be as follows:

Maximum water depth:	Riser Drilling;	4,000m (2,500m initial stage)
	Riserless Drilling;	7,000m
Drillstring Length:		12,000m (10,000m at the initial stage)

(5) Automation systems should be introduced for effective and safe handling of the drilling equipment. Also enough spaces for handling, checking, maintenance and adjustment of the drilling equipment should be prepared.
(6) The drillship should have the capability to recover subsea/well systems rapidly and evacuate to a safe area when hazardous sea states or weather is forecast.
(7) The drillship should have the capability of controlling the well and preventing an oil or gas blowout while drilling.
(8) The drillship should have the capability of obtaining continuous cores effectively and safely over the entire drilling interval
(9) The standard core diameter should be the same level as that obtained by ODP's JOIDES Resolution.
(10) The drillship should have a capability to process/analyze the recovered cores and cuttings immediately on board and should have space to store them.
(11) The drillship should have comfortable accommodation facilities for long duration cruises.
(12) Environmental pollution safeguards should be considered as per international requirements.

III Principal Specifications of the Drillship

(1) Class: NK, DPS-B

(2) Operational Sea Condition:

		Normal Conditions.	Wait on Weather Conditions.
(i)	Wind Speed (1-min. av.)	23msec	30m/sec
(ii)	Sig. Wave Height	4.5m	5.5m
(iii)	Wave Period (Av.)	8.2sec	9.0sec
(iv)	Surface Current	1.5knot	2.5knot
(v)	Direction of External Force	±30°	±30°

(3) Ship Size
Overall length: 210m
Breadth:38m
Displacement: 60,000 ton
Draft: 10m

(4) Thruster/Propulsion
Diesel-Electric System with Retractable Azimuth Thrusters for DPS and Propulsion

(5) Position Reference System for DPS
Hybrid System of DGPS and GPS-Glonass
Underwater Acoustic System
Riser Inclination Angle Method at Both Ends of Riser

(6) Accommodations are for 150 persons:

Navigation/Maintenance Crew:	32
Drilling Crew:	19
Subcontractors:	18
Catering:	19
Operation Supervise:	3
Researchers:	31
Research Assistants:	20
Reserve:	8

(7) Staterooms
Single Room or Substantially Single Room with Shower and Toilet at each Room.
Ceiling Height: 2.4m

(8) Noise Insulation between Rooms

Between Staterooms:	30dB
Between Stateroom and Public Room:	45dB

(9) Supply Plan Targeted 1 Leg Duration: 6 months
Supply: Once every 2 weeks
Capacity of Drillship: Can be operational for 4 weeks without supply

(10) Riser System
Nominal Diameter of Riser: 21 inches
Nominal Length of Single Riser: ab. 90 ft

(11) Derrick and Standpipe
Standpipe: Connection of 4 single drill pipes
Derrick: Can hold all the standpipes by Setback while cruising, operation, and survival
Be flexible to the future technology development

Annex 5

ICDP Information

GFZ Potsdam
DOSECC

Annex 6

Baker Hughes Inteq information

Annex 7

HYACE Information

HYACE Tools Test at ITE Clausthal

The HYACE (Gas **HY**drate **A**utoclave **C**oring **E**quipment System is an European Union (EU), Institute and Industry funded tool technology development designed, as a first step, to collect cores of gas hydrate bearing sediments at near 'in-situ' conditions then bring them to surface using a pressure vessel (autoclave). At surface the core is transferred to a Laboratory Transfer Chamber (LTC) to allow non-destructive testing and imaging of the core before the pressure is released and the hydrate allowed to sublimate. Opportunity will also be available to sub sample the gas present and to monitor temperature and pressure during and since the core collection stage.

The tool has application in any coring project onshore or offshore. Fugro are already involved in industry applications of a version of the push/percussion corer. The rotary coring version has been developed, as a first step, with the ODP Gas Hydrate Programme in mind. A HYACE Engineer from Germany was onboard Leg 164 with the ODP Pressure Coring System (PCS) and it was after the limited success of that tool, on that leg, that the HYACE Project was proposed and then accepted by the EU MAST Programme for 50% funding. The remainder of the funding comes from the partners in Germany, France, Holland, Greece, Spain and UK.

ODP have offered ship time for trials if the tool is test-proven. The technical committee of ODP (TEDCOM) were invited to view a full-scale operational test of the HYACE percussion and rotary coring tools taking place at the test facility in the Technical University of Clausthal. The tools are now nearing prototype completion and the first, full scale, operational tests have been successfully completed. A demonstration under actual operating conditions was arranged using an ODP Bottom Hole Assembly (ODP-BHA) Configuration, in a 30 metre deep shaft, as the actual drill string for the test. Rock samples were made up using a compacted silt/clay/water mix to simulate a sample of cohesive soil material and a sand/silt/cement/water mix to simulate a sample of cemented hydrate rock material.

Good quality core samples were obtained from the mixes using the push/percussion sampler in the soils mix and the rotary, downhole motor driven corer in the cohesive mix. A simulated heave can also be added to the drillstring while coring (ODP does not yet have a fully compensated drill string). Previous tests under drillstring movement of a few centimetres also allowed coring under rotary conditions without the motor stalling or the bit lifting off bottom which is a huge technological leap over previous downhole motor systems. The test parameters can be recorded digitally and some copies are attached.

As only a 'dummy' rod was inserted in the autoclave chamber and core barrel of the coring tool during the coring tests the collected core could not be transferred from the autoclave into the Lab Transfer Chamber (LTC) which was also on display in the laboratory. The real rod which controls the piston and the core recovery into the chamber will also contain the downhole monitoring system for pressure and temperature and contain a coupling connection for retrieval into the LTC. Such a feature is not available for the existing ODP PCS. The LTC is presently undergoing pressure certification by the German Certifying Authorities and this will also meet Lloyds, DNV or ABS certification.

Professor Hans Amann, co-ordinator of HYACE and Professor Claus Marx, recently retired Head of Engineering at ITE led the discussion and questioning during the visit. Other HYACE members Herman Zuidberg of Fugro and Alister Skinner of BGS (also a TECOM member) were also present at those times. Fugro and ITE engineers conducted the tests and were on hand in the laboratory test area to answer questions and show features of the tools and the drawings. Various handouts were also provided.

Discussion on an offshore trial of the tool, with ODP, prior to actual use on an ODP Gas Hydrate leg was already ongoing and was tentatively scheduled for leg 191. However the lithologies anticipated on that leg

plus all of the other ongoing activities and length of leg rules it out as a viable one for a test. (HYACE engineers would have had to be on board for 60+ days for a 3-day maximum test. The most likely next possibility is leg 194 which could allow a similar testing programme over a more relaxed timescale and still be completed in about two weeks with changeout of crew possible.

Amann and Zuidberg will continue dialogue with ODP-TAMU on the remaining issues before the tools can be accepted for a trial with ODP. Mike Storms is due to visit ITE in mid-June and should be able to resolve outstanding dimensional or operational issues at that stage. It was clearly stated and is re-iterated here that TAMU will not receive, and should not expect to get, proprietary information about the tool which is not necessary for the tool or its maintenance. It will be accompanied by operators/design engineers as it is still on test. Should ODP eventually acquire a tool for their own use then this would be the subject of a separate agreement pertinent to the operation of that tool by a third party (i.e. ODP).

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HYACE Participants M6 Meeting