Final Draft of Minutes of the 28th TEDCOM Meeting held at Fugro-McClelland Marine Geosciences, Inc. Houston, Texas on 29th and 30th May 2001

Summary of TEDCOM Recommendations to SCICOM

TEDCOM RECOMMENDATION # 01-1-1
TEDCOM recommend to SCICOM that for the remainder of the ODP Programme limited and specific Engineering Development field trials be allowed for short periods within scientific legs. This is intended to be in addition to any planned engineering legs and, in the short timespan remaining, seen as a means to bring tools which are required to meet the current ODP science objectives on line more quickly and with a measured chance of success.

Currently some of the ODP tool developments are designed, built, perhaps shore tested and then left on the shelf for an unspecified time before being taken for field trials on an engineering leg. Usually these field trials are programmed because of an immediate future scientific need for the tool and a necessity to know if it really works. The engineering legs are subject to curtailment and the normal weather and other ship issues so an outcome can be incomplete testing. If the tool requires modifications which cannot be carried out on board then the test also becomes inconclusive and may have taken up valuable ship time unprofitably. It is prudent to consider specific tool tests of a few hours to a few days duration in appropriate geological formations and when appropriate engineers are available on a leg. This will resolve some design/development issues and allow for more efficient tool development by adopting a 'problem solving' rather than an 'all-or-nothing' approach immediately before it is required to meet prioritised science objectives.

Those present:
Members:

Joe Castleberry (USA)	Hugh Elkins (USA)	Carole Fleming (USA)
Masanori Kyo (Japan)	Char-Shine Lui (Pacrim Alt.)	Howard Shatto (USA)
Alister Skinner (UK, Chair)	Axel Sperber (Germany)	Walter Svendsen (USA)

Apologies from:

Marvin Gearhart (USA)	Sergio Persoglia (ESF)	Frank Schuh(USA)
Brian Taylor (Pacrim)	Shinichi Takagawa (Japan)	

Guests/Liaisons:

Jamie Allan (USA, SCIMP)	Jack Baldauf (ODP-TAMU)	Ted Bourgoyne (USA, IPSC)
John Boyce (Fugro-McClelland Geosciences)		Mike Friedrichs(ODP-TAMU)
Karen Graber (ODP-TAMU)	Leon Holloway (ODP-TAMU)	
Brian Jonasson (USA, ODP-TAMU)	Peter Looijen (Fugro BV)	Ted Moore (USA, IPC)
Greg Myers (USA, LDEO)	Carlos Pirmez (Exxon Mobil)	
Sven Plasman (Fugro – McClelland Geosciences)		Gene Pollard (ODP-TAMU)
Frank Rack (USA, JOI)	Derryl Schroeder (ODP-TAMU)	Brent Shoemaker (USA, TSF)

Apologies from:

Kier Becker (SCICOM)	John Farrell (JOI)	Jeff Fox (TAMU)
Dave Goldberg (LDEO)	Kate Moran (ILWG)	Dieter Eickelberg (IPSC)

A draft Agenda was prepared for the meeting. The numbered sections in the minutes following refer to the numbers in the agenda which is also included in **Annex 1**.

Opening Remarks:
Alister Skinner opened the meeting by thanking Joe Castleberry of Fugro-McClelland Geosciences for hosting the meeting and everyone present for coming. Joe outlined some domestic arrangements and advised that he had set up some demonstrations of the Fugro-McClelland capability for during the afternoon session. Some re-arrangements had to be made as some equipment which it was hoped to show had to leave for the field that morning. He also intimated that Fugro-McClelland would be pleased to host a dinner this evening and requested names so that a booking could be made.

1. Welcome to New Members
Alister Skinner welcomed New TEDCOM Members Carole Fleming (USA), Masanori (Nori) Kyo (Japan) and Axel Sperber (Germany).
Having conferred with other, longer serving members of the committee, Alister said that he believed that Carole was the first lady Member of TEDCOM.
A welcome was also given to Char-Shine Lui attending his first meeting as the alternate PACRIM member.
It was with regret that the committee heard that Shinichi Takagawa had resigned as the member for Japan but Nori assured us that he did so to concentrate on the new Japanese Riser Drillship programme so we know he will not be lost to the programme. Alister undertook to write a letter of thanks to Shinichi on TEDCOM's behalf.
A self introduction of all present then followed and contact details of those attending are contained in **Annex 1**.

2. Apologies for Absence
Alister Skinner intimated that he had received apologies from members and Liasions as shown above. Ted Moore was standing in for Becker (SCICOM), Frank Rack for Farrell (JOI) and Greg Myers for Goldberg (LDEO).

3. Approval of Final Daft of 27th TEDCOM Minutes
The final draft minutes of the 27th TEDCOM Meeting held at College Station were approved as mailed.

4. Report from JOI
To assist the new TEDCOM Members familiarise themselves Frank Rack presented a series of viewgraphs. He updated the committee on the ODP Management Structure at JOI, the JOIDES Advisory Structure, the ODP Budget, a Financial Year 2002 preview of the ODP Budget and initiatives associate with the IODP Long Range Plan.
In addition Frank said that JOI had submitted a proposal to the U.S. DOE methane hydrate solicitation to request support for engineering development activities in support of ODP . This was done with the view of obtaining additional funding to support continuing equipment development that is needed now, but which cannot be funded under the flat-funded ODP budget. The developments outlined in the proposal submitted to DOE would also be pertinent for IODP. An example of immediate need that could only be addressed by a mission specific platform is the JOIDES top-ranked scientific proposal (# 533 - Lomonosov Ridge), which is now being evaluated by the Arctic Detailed Planning Group to determine what would be required to accomplish the proposed science if funding was available.
JOI are also addressing the issues and options connected with the legacy of ODP, in response to previous EXCOM motions, by conducting a review of ODP assets and resources, including databases, Core Repository Facilities, and publications, and have outlined other activities which are expected to

continue beyond the end of the drilling operations in autumn 2003.
Viewgraphs pertinent to all of this are contained in **Annex 2.**

With regard to Frank's comment that the published literature was being searched to assemble a publications database to provide part of the ODP Legacy documentation, Jamie Allen asked how this was being done. Frank explained that GEOREF had been used with key word searches and that this was then compared with manual searches of a number of volumes/journals. GEOREF was then 'upgraded' with the co-operation of the American Geological Institute (AGI) to ensure that DSDP/ODP literature was being fairly reflected in any searches made.
On behalf of NSF Frank also outlined the schedule for IODP activities in the coming months and explained in more detail how JOI was actively responding to funding opportunities that conform with the immediate needs of ODP as a way of meeting the TEDCOM recommendations to try to ensure continuing equipment development during the ODP/IODP transition. The DOE methane hydrates research programme was seen as being relevant to this goal, as were those activities involving groups such as HYACE/HYACINTH (European Union) and an evolving Chevron-led JIP on Gas Hydrates.
Finally Frank reported that JOI hosted a co-chiefs review meeting in April and any technical aspects arising from that very successful meeting will be forwarded to TEDCOM.

5. Report of SCICOM/OPCOM Meeting in Shanghai, China

Alister Skinner and Ted Moore both attended this meeting. The four TEDCOM Recommendations from the previous TEDCOM meeting were discussed at OPCOM and two were either resolved or actioned by the time of the meeting. Recommendations 002-2 and 002-4 (Legacy Documentation direction and Preservation of ODP Engineering Capability for IODP respectively) were forwarded to SCICOM. In SCICOM Motion 01-01-04 they were endorsed with no opposition. The minutes for the OPCOM and SCICOM meetings will shortly be published on the web at http://joides.rsmas.miami.edu/.

6. Report on ODP Activities at TAMU and Shipboard

ODP Tamu prepared a powerpoint presentation covering all of their agenda topics and those attending from that Group addressed the topics. **Annex 3** has full details.
Gene Pollard summarised the Leg activities.
Leg 193 had drilling problems associated with sulphide mineralisation and bad geological formation conditions. The science of the leg was saved by use of the Hammer Drill System (HRS) and the Advanced Diamond Core Barrel (ADCB). Although both tools, still in their trial phase, worked well some disturbing details of drilling parameters being used when deploying the ADCB were disclosed and are discussed later in this section.
Leg 194 deployed the prototype HYACE tools. The ADCB was also used successfully on this leg, again in difficult formations. Further details on these follow later.
Leg 194 also had very erratic core recovery and this is entirely due to the geological conditions encountered.
Leg 195 saw operations being conducted successfully in very deep water.
Leg 196, currently underway, is a return to Nankai
Leg 197 still has some critical clearance problems to be resolved and is in deep water.
Leg 198 on Shatsky Rise will have some new bit developments to assist in these difficult geological conditions.

Brian Jonasson outlined the Development Strategy which was started in 1996/97. There is a key interface with TEDCOM and it meets a requirement which was desired by the scientific community. The Short Range Project Plan is effective to the end of the current ODP.

The Long Range Project plan takes into account developments desirable for IODP and will also look into the possibility of having a single BHA for all ODP-type operations.

Leon Holloway then introduced the Hard Rock Re-entry System (HRRS) tools and the Advanced Diamond core Barrel (ADCB) tools which had been tested on Legs 193 and 194. Leon had been on board for both legs.
With regard to the HRRS he stated that the work in improving the standpipe fixings on the vessel and the introduction of a pulsation sub in the BHA were both successful in overcoming previous problems and the system was working well. The pulsation sub needs to be made more robust. Leon suggested that the HRRS could be again deployed at a site on 9 degrees North which was an area requested by the proponents be looked at again now that suitable technology was available. However Jack Baldauf reported on SCICOM deliberations which determined that that proposal would not be revisited in the ODP programme. OPCOM however suggested that there may be merit in proposing an engineering leg in the same area which would allow continuation of the engineering development and possibly also some science.
In response to a question by Axel Sperber Leon gave the fluid parameters for hammer operation as 400gpm/1800psi at the drillfloor.

Leon then described the operational modifications made to the Advanced Diamond Core Barrel (ADCB). A shock sub and circulation sub have been installed in the BHA, a new style inner barrel latching system which allows the driller to know when the inner barrel is properly latched was developed and also some new core bit developments. The latch and core bits were developed in conjunction with Longyear and JAMSTEC. The ADCB development is in part funded by JAMSTEC as part of a programme of development for IODP.
There was much discussion on the manner in which the ADCB was utilised on Leg 193 in order to save the science of the leg.
Although the core barrel had very good success on leg 193 it was not the tool of choice and it was not used in the designed manner. Coring parameters were not used regarding fluid flow and hole flushing. TEDCOM were not impressed with the drilling strategy used while the ADCB was deployed and would not recommend that this approach continue. The required coring parameters are known and can be utilised so either education in tool use to avoid misuse is required or a separate insert bit inner barrel is required to allow a drilling rather than a coring mode when this is deemed necessary. The way in which the core barrel was used could have seriously damaged it and jeopardised its whole future within the programme because, whatever the reason, it would have been branded as being no good had this misuse proved catastrophic. This is especially true when other scientific coring (e.g. the Hawaiian Deep Drilling) can be cited as successful use of such tools in difficult conditions so clearly more education in tool use is required..
Onshore tests with the corebarrel used in correct mode demonstrate that routinely the core recovery is greater than 80% and normally in the 90% range.
This led to a discussion on how tool testing can be carried out within the programme and why (understandably) engineers will try a tool test at any available opportunity. The TEDCOM consensus was that there needs to be some engineering tool development time built into the science plan (probably in addition to engineering legs) by allowing time out on a science leg. This needs to be linked to available and appropriate engineers and tools which are at a stage of requiring testing of some elements. Such testing could be of a few hours to a couple of days in total on a leg and subject to all of the usual caveats.
Jamie Allan asked if there were any plans for this in the long term and Jack Baldauf stressed that the science legs were already curtailed in science time from what the scientists wished. Clearly the relevant engineers would need to be on the leg but, as Jamie pointed out, in at least two situations of which he had personal awareness under-developed equipment had saved the science of the leg.

TEDCOM Recommendation 01-01-1 addresses this issue within ODP but it must also be addressed as a matter of some importance for IODP. The scientific success due to the ADCB on leg 193 cannot be underestimated and this is due to having both the under-developed tools and the design engineer on board to facilitate their deployment on the science leg.

Mike Friedrichs then updated the information on the AHC. Unfortunately the Passive compensator is running again with high friction seals and all that is inherent in their poor performance will further detract from AHC performance. There is still a large weight on bit variation. The Martin Decker filter project is underway to stabilise, (by filtering), peaks and troughs in the drillers readout of string and bit weight. Wireless links are being used for data communication with good results (900mhz) In answer to a question posed it is fully acceptable under all operational conditions except string severing where explosives are involved.
Work is underway with Maritime hydraulics to obtain an autodrill function and they have a 'good working technical agreement' on which to base this.

Derryl Schroeder described the Rig Instrumentation System (RIS) and stated that the sensors and the collected data were becoming a good engineering tool and well as aiding the drilling operations. There is a wireline information system (WITS) which allows the RIS to talk with the Anadrill MWD/LWD system and obtain data for analysis. Future plans are to implement the hook load and bit weight load into the RIS using the wireless transmission system. The RIS can also take control of, and automate the operation of the tracer control pump for microbiology. Ideally it would be nice to try this on leg 201. The integrated approach for all downhole data acquisition is working well and is being extended to include data collection in other sampling tools. The APC methane tool has now been successfully deployed. Some modifications are required both in the tool and data transfer software and these are being addressed with MBARI. This tool measures P&T conditions and can sense dissociation of gas hydrate if it is present in the sample and becomes unstable. Frank Rack intimated that one aspect of the JOI proposal submitted to DOE includes a request for an infrared thermal imaging system. This can be used to detect the possible presence of gas hydrate or its components by identifying thermal anomalies in the collected core and comparing them to in-situ and downhole measurements of temperature and changes in the collected core during recovery.
The Davis Villinger Temperature Probe – Pressure sensor (DVTP-P) is promising but expensive components are suffering from corrosion and some repackaging or corrosion inhibiting painting may be required.
The Pressure Core Sampler (PCS) is being assessed. It needs improving especially in Bit design. A graduate student has been hired in for the work. In view of all the work which went on during HYACE to evaluate bit design Skinner requested that TAMU utilise that research fully before embarking on more.
Mention was made of conflict between having some PCS tool items ready for testing on leg 201 and their requirement for leg 204. The HYACE development has a similar situation.
The report presented by TAMU on the prototype seatrials of the HYACE was not accepted by Peter Looijen of Fugro who was on board for the trial. He disagreed with the conclusions (see **Annex 3**) which simply put the tools in a bad light. He agreed that there had been teething problems but many were resolved on board, others which had been identified are now corrected. Some problems were induced by having to operate the tool under existing ODP BHA constraints. He submitted his shipboard activities report on the Fugro Pressure Corer which is also contained in **Annex 3.** A report on the HYACE Rotary Corer version also deployed on the same leg was prepared by Hans Amann of the Technical University of Berlin for the China SCICOM meeting and it is also included in **Annex 3**.
In discussion both during the session and in breaks it became clear that the ODP drilling engineers on board the JOIDES Resolution during the HYACE trials were not briefed with the reports of the tools, the certifications made or the requirements needed for deployment of the prototype tools. All of these

details had been sent to TAMU, as requested by them, before the tools could be considered for shipboard trials.
Some discussion also centred around the developments of the PCS and the HYACE and it is not at all clear at this stage whether they are seen as competing tools or a concerted joint effort to obtain good gas hydrate samples.
Work continues on the drilling sensor sub (DSS), developments are in hand for a conductive memory recording module in conjunction with LDEO and these developments are also an element of a Global Petroleum Research Institute (GPRI) bid. GPRI is an oil company consortia based at Texas A&M.

Leon Holloway updated the TAMU research done on wireline percussion samplers since TEDCOM requested that they be looked into. He had a remit to see how they could be linked in to as much existing hardware and operational aspects as possible. He stated that there is some reluctance within the operations crew to run such tools. Discussion on this point indicated that the vessel operator will run any tool provided that there is not a safety or personnel issue whereas the operations team are worried about wireline and associated tool change problems and the security of the drillstring (getting it stuck downhole). Alister Skinner re-iterated the background to the request (from TEDCOM member Brian Taylor) which was to obtain spot information in borehole lengths of up to 150m where no recovery was being obtained by other means and where a known tool could fill in that gap in the data. Some of the reservations showed a lack of understanding on how the tool can be easily and quickly deployed. Carlos Pirmez asked if it was really necessary to know what was there? (the assumption seems to be it is always sand but given the high pumping rates mentioned already today that may not be the case) and there are other ways of assessing that part of the borehole. Clearly there is a reluctance to use a simple tool and if it is so problematical to use in ODP as was suggested here and outlined in the detail in **Annex 3** then TEDCOM must ask the scientists, through SCICOM, if they wish this to be pursued. It may also be addressed by some type of hammer or percussive corer as further described by Leon and demonstrated by Fugro and HYACE but this would also have to be accepted by the operational team on the vessel before it is worth the time and effort pursuing the interface.
Leon also outlined the historical development of the Vibra Percussive Corer (VPC) which used a novatek hammer, the Fugro Percussive Corer which is based on a Russian hammer and also mentioned that there was a possibility of using a smaller SDS hammer. (SDS are the company responsible for the hammer development of the HRRS).
During much discussion on this subject it was clear that there were a number of avenues open to progress an appropriate tool. Peter Looijen felt that good progress could be made if the APC technology of ODP was linked to the hammer technology developed by Fugro for the HYACE programme. The combined tool would assist in sampling unconsolidated and granular materials (See demonstration details in section 9).
Clearly however there is a scientific school of thought which was articulated by Carlos which says that core may not be required in those intervals if MWD and other remote means can fill the gap. As there is always an overwhelming backlog for development time this needs to be assessed although it is possible that a revised tool addressing the functions of the existing APC and XCB tools is both achievable and of considerable merit.
Brian Jonasson concluded the TAMU presentation by stating that they had made good progress on the Legacy Documentation and would meet the ‘one-page-per-tool summary by SCICOM’s due date. The technical documentation is also in hand but on a much longer timescale, including post 2003. Long Range Planning of tool development was also identified though not necessarily funded and it included items such as looking at one BHA for all tools and integration of the PCS with the Motor Driven Core Barrel (MDCB). Again it is hoped that the HYACE development would be looked at here before embarking on a parallel development.

7. Report on OD21 Activities

Masanori Kyo updated the details of the OD 21 project. With regard to the riser drilling vessel the hull schedule is on time and workshop tests have been completed on the thrusters and generators required. Many other studies are also progressing for fitting out the vessel with its machinery, laboratories and drilling and coring equipment. Beneficial changes, for example to the laboratory layout, have resulted from these studies.
Additionally a programme for investigating the seafloor and sub-seabed observatories which will be installed on the Riser Drilled Boreholes is being developed using the BENKEI system with ROV support and a capability to 6000m water depth and 1000m downhole. Details are attached in **Annex 4.**

8. Report on Activities at BRG (LDEO) and Shipboard

Greg Myers summarised the activities since last TEDCOM and **Annex 5** has details. There has not yet been time to analyse data collected from Leg 196 pertinent to the AHC and drillstring motions but there is clearly a lot going on which requires interpretation before an operational understanding is gained between downhole and top hole.
Leg 193 saw good images coming from the Resistivity at Bit (RAB) tool on it's first time used. Temperature measurements were collected in the Core Barrel temperature Tool (CB-TT) and the Ultra High Temperature- Multi Sensor Tool (UHT-MSM) both of which are memory module tools.
Leg 194 saw the Core Barrel Drillstring Acceleration tool (CB-DSA) being run with the HYACE rotary tool. The Multisensor Gamma ray Tool (MGT) was also deployed successfully.
On leg 195 the temperature acceleration and Pressure tool (TAP) was lost due to string vibrations. Another will be made up. The logging equipment was used on Legs 195 and 196 to deploy seismometers and ACORKs.
Leg 196 as indicated earlier had the MWD and Active Heave Experiment. Other tools run successfully were RAB, Azithumal Density Neutron (AND) plus Integrated Sonic (ISONIC).
Planned legs through to 199 are primarily routine tool runs including the MGT.
Legacy documentation is progressing and on target for SCICOM deadlines. There has been good interchange of data and operational details between TAMU and LDEO.
There is a request in the FY2002 programme plan for a Drillstring Measurement System (DMS). The existing CB-DSA will be modified to be a Core Barrel Retrievable Memory Module and be inductively coupled to the Drilling Sensor Sub (DSS) using an inductive modem. This will allow data in non-Anadrill format to be collected and at better data rates. (Anadrill collects data on a >30 second average in their low temperature tool, we need a < 30 second average for meaningful drilling information). This will allow data to be obtained after each core run without any loss of drilling time. This application for funding involves separate but collaborative developments within LDEO and ODP-TAMU. Frank Rack stated that no go-ahead had yet been given for the project.

Leon Holloway said that the DSA tool had also been run with the ADCB and RCB to obtain data. No additional rig time is involved.
In answer to a question from the floor it was stated that all of the ACORK completions, and other in-hole completions, are designed to be data retrievable by other vessels. Currently it is intended to revisit the Nankai ACORK sites in 2003 using a Japanese ROV.

9. Demonstrations of Coring Tools and Laboratory Activities

One of the reasons for holding TEDCOM at this location was to take advantage of seeing a suite of high quality coring and ground probing tools currently not used in ODP operations although they are used in other offshore scientific drilling scenarios throughout the world.
A full range of push samplers with and without catchers, drillstring operated and hydraulically operated together with sliding hammers were all displayed as were a set of Cone Penetrometer Tools (CPT's) which can be operated hydraulically with a line from the vessel or remotely by the drilling fluid.

The Fugro Percussion Corer (FPC) as used in one of the motive forces for the HYACE tool was demonstrated and simulated coring in soft sediments (no hammer action, straight push as with a piston corer) and in harder or granular sediments where the hammer action came into play.
A presentation on laser spectroscopy for the study of contaminated sites by geochemical means was given. The technique used state-of-the-art geochemical probes and sensors coupled to the well-proven Cone Penetrometer Technology for implanting a probe into the ground in a measured fashion.
A tour of the extensive soils testing facilities in a laboratory dedicated to this revealed the extent of the work this company undertakes in the field of obtaining high quality geotechnical cores from around the world and then providing engineering reports based on the data. That the tools were developed to service the geotechnical need immediately suggests potential for ODP science applications. On completion of the demonstrations and during discussion afterwards Joe Castleberry also circulated a draft technical document on their planned new geotechnical drillship which is intended to have a 3000m water depth capability and the facility to operate a multitude of corer types including long gravity operated piston corers. **Annex 6** has details of the vessel and the coring suite it will carry.

10. Presentation – 3D High Resolution Seismics

Kerry Campbell completed the presentations with a spectacular display of High Resolution 3D seismics developed for engineering geophysical and geotechnical use and immediately applicable to much ODP and IODP site survey work. The cost of acquisition of this data is a fraction of the cost of conventional 3D-seismic (typically $26,000/day excluding mob/demob.)as there are no long streamers and only low power seismic sources are used. It works better the deeper the water as the seabed multiple does not then interfere in the data presentation and interpretation.
Industry is interested in such data as there are complex shallow (seabed) conditions in deepwater areas where it is difficult to image with conventional 3D and it is difficult to get cores. It may also be difficult therefore to interpret critical areas and identify hazards. Increasingly the technique is now being used for development and currently there is a backlog of requests for the survey services.
During discussion Carlos Pirmez remarked that ODP will have to do many more surveys of this type to understand sites for deep drilling. Jamie Allan, Ted Moore and Alister Skinner all stated that this has been recognised and plans are already underway to increase such survey work. As this High Res 3D survey equipment can be modularised and fitted to many different vessels it is another avenue worth exploring for ODP/IODP. **Annex 6** has more details.

11. IODP Activities

Ted Moore introduced the topic and stated his interest in the continuation of the programme having been involved with DSDP and ODP. The new programme will be somewhat different with Japan being a major player with the provision of the riser drilling ship for the programme and the US providing another, non riser drilling vessel. Both countries will be responsible for 'their' vessel operating costs and science funds will be comingled to meet science costs.
An international working group (IWG) has been set up and procedures and memoranda are under discussion. It is anticipated that a memorandum of understanding between the US and Japan will be set up by the end of this year and various principles of agreements are already being defined and refined with all potential international participants.
Once the US/Japan MOU is signed others with international partners will follow but all will adhere to the agreed principles. Whatever agreements are made with others the US and Japan will remain as equal partners.
IODP will continue to be science driven and according to a science plan now published (see http://www.iodp.org) and in accordance with evaluation schemes derived from the ODP committee structures organised under an Interim Planning Subcommittee which will shortly be confirmed as a permanent structure for the new IODP.

Committee structures which have not yet been set up are those for Industrial Liaison, Scientific Measurements and Technical Advice.
Organograms of where all of this fits together are contained in **Annex 7.** There will be separate entities all acting under a joint Board of Governors who are neutral to the operations of the programme and are governed by the integrated science programme. Europe may introduce another dimension with Alternate Platforms. **Annex 1** has website details for anyone wishing to pursue the many committees and workshops devoted to ensuring the best forward strategies for the new IODP.
Ted then outlined what he felt was needed from a TEDCOM equivalent for the new programme. Expanded expertise, expanded remit and an acknowledgement of past strengths and weaknesses to progress necessary tool development from the research stage to the development and operational stage. Critically there were key issues:

1. Identification of technical needs for scientific objectives 2-5 years ahead
2. Development of 'performance specifications' for each need and an assessment of whether R&D or 'off the shelf' technology will meet the requirement
3. Decide how to implement the need once the specification and assessment are reviewed and fully agreed.

He thought that development of this would involve Working Groups, Joint Industry Proposals and an interest, possibly financial, in commercial developments. Further a decision making tree would have to be developed and possibly a research working group would be required to decide if and how IODP could (or should) develop the required technology.

All of this generated some discussion with existing methodologies or loyalties clouding the issue to a certain extent. However there were some issues which needed addressing in the proposal structure and these were noted by Ted as an aide memoir for further deliberations. Specifically it was felt that there should be platform operator interface at the Central management Office (CMO) and that there should be some form of review of RFP specifications by the technical Advice group before they were sent to potential bidders. The same group could also be available to assist with the review once bids were received and before a contract was placed.
A membership for a Technical Advice Group was suggested by Ted. Concerns of operational issues (technical representatives from the platform operators needed) and the requirement for closer liaison with other scientific drilling bodies such as the International Continental Drilling Programme were noted for consideration.
Jamie Allan also felt that some of the decisions which would have to be made by a SCIMP equivalent committee would need a wider expertise at the research/evaluation stage and that this should be in some way linked in. He did not feel that having the SSEPS chairs as members of the committee would necessarily be sufficient. Upon discussion all felt that this is also applicable to ODP and perhaps, before the end of the current programme TEDCOM and SCIMP could meet in similar fashion to the SSEPS panels and hold a joint working group if necessary.

Discussion on some aspects of 'who would do what' raised issues:
Who did development? – it would not necessarily be by the platform operators. This led Gene Pollard to emphasise that technical input would therefore be necessary from the platform operators and should not necessary be structured to come through the CMO's directors.
Who did logistics? – they would be the job of the platform operator.
Will there be close co-operation with other programmes? Axel Sperber asked the question and cited the work of ICDP as an example of where there may be information to be gained. It was stated that there would be such co-operation.
Alister Skinner said that each scientific project could have a parallel with the existing Programme Planning Groups (PPG's) or Detailed Planning Groups (DPG's) with regards to the necessary technology to meet the science. Such a brainstorming could introduce new insights.

There were some concerns on the TEDCOM to SCICOM reporting and the necessity to have a broad expertise. Favourable and unfavourable comparisons were made with the merging of existing scientific panels of ODP but in general those who were involved thought that they were working better. Jamie Allan would welcome closer links between TEDCOM and SCIMP as stated earlier which would in itself mean a wider ranging panel. Working groups could take care of detail. Frank Rack agreed and Howard Shatto thought that any meetings which TEDCOM had with the wider scientific community were always beneficial and allowed the broader perspective to be taken.
Brian Jonasson had reservations about how third party equipment could be integrated and he felt that this needs to be directly through the operator as at present. Jamie Allan thought that the operator needed to have first hand information but that good communication was going to be essential anyway. Alister said that many potential operators have a wide experience of making third party tools fit as the problem is not unique to ODP. Brian thought that it would be difficult to get the necessary expertise on to an engineering panel. Ted Bourgoyne agreed – people with the necessary expertise are invariably busy and he found this out while conducting the Technical Advice Working Group (TAWG) for the Interim Planning Subcommittee (IPSC) – the paying customer has to come first.
Brian and Gene had concerns if the technical developments were broken out from operations and cited difficulties with ongoing developments and ongoing upgrades. Alister remarked that merging of these activities with no ring-fenced budgets had been a serious bone of contention with the science operator, TEDCOM and SCICOM over the years and had led to one major review. Project specific equipment developments and upgrades incorporating platform operator personnel in the development team would be more accountable and directly linked to the science which dictated their status.
Brent Shoemaker asked whether there was any pre-IODP activity being done to support the RFP requirements. Ted Moore responded with details on the Conceptual Design Committee whose report is on the web and which is being evaluated by a consultant for NSF who will ultimately prepare and issue the RFP. Brent had concerns that the CDC report could jeopardise NSF obtaining good options for a non-riser vessel for IODP if it was taken too literally into an RFP. Jamie Allan encouraged all American Citizens to write and tell NSF if they felt they could help or clarify points. The non-riser drillship will be an exclusively American contract so they will be calling the shots on the RFP and the ultimate contract negotiations.
Following a number of hypothetical questions, It was thought by Frank Rack that a situation similar to what transpired during the transition from DSDP to ODP would likely take place, where a Science Operator was first contracted and that they then subcontracted the vessel. If the DSDP-to-ODP transition is taken as a guide, then there is likely to be a one year gap between appointment of a science operator and appointment of a vessel for the contract.
There are many unresolved issues at this stage but it is clear that TEDCOM and SCIMP panels either jointly or separately will still report and act through SCICOM. The contractor will act on detail provided by the client (so it had better be the best available), there will be continuing problems with 'conflict of interest' and in obtaining realistic budgets for the work demanded. Some issues can be resolved by having platform operators represented at the Central Management Office and everything can be improved by meaningful communication. It was anticipated that bids for work would be made through the Science Operator.

Alister Skinner then gave a short presentation on the aspirations of Europe acting as a single entity within IODP to provide a method whereby 'Mission Specific Platforms' could be integrated into the programme. This would provide a means of carrying out science which would not otherwise be possible using the two main platforms – e.g. Polar Drilling, Coral Reef Drilling, Shallow Water Drilling. **Annex 8** has some more details. In answer to questions Alister stated that it was envisaged that these platforms would be 'one-off' and project specific and therefore would involve many different types of contractor or platform. Coring tools will be of high quality based on mining and

geothechical drilling techniques and utilising their range of core barrels and coring tools. Laboratories would most likely also be modular (containerised) and be provided by those institutes throughout the world who currently use them as this avoids having to obtain more certification. Logging is likely to be using new generation small diameter tools which are more lightweight and modular yet have all the present functionality. Again in response to further questions Alister said that all operations would be under the aegis of a European Operations Office as is the case for the Japanese and US platforms in order to comply with the IODP MOU. See also the JEODI website www://jeodi.org. Some examples of the scientific scenarios presented at the Brussels Industry and Science meeting and the APLACON Meeting in Lisbon were also presented.

In a summing up session on IODP Ted Burgoyne explained how he had tried to pull various experts in drilling, H&S and logistics together into a working group for IPSC. Despite keeping it local to Houston he had difficulty keeping people involved due to their other commitments but he was able to advise on items such as labstack vibration on OD21, cost estimates for model riser holes, hazard surveys for riser holes and general management of drilling platforms. He also had limited funds to hire paid consultants to assist with the work. He quickly realised how much unpaid effort was put into the ODP programme, from engineering as well as science.
In his view the new programme should have a centralised engineering overview and thus the CMO will have to have a good engineer in it. Working Groups should be set up to develop identified new technology requirements and they should utilise all operators and industry. Developments should be limited to meet their desired purpose and there should be standardisation wherever possible. He felt that Ted Moore's suggested technical committee structure was good and that coring, logging, drilling and downhole measurements need to be properly integrated.

Carlos Pirmez stressed the need for site surveys commensurate with carrying out riser drilling and asked if any thought had been given to the additional work which was required in those aspects, not simply in site surveys with geophysics but also in pre-drilling pilot boreholes to ascertain geological conditions. Alister Skinner, Frank Rack and Jamie Allan stated that the community were aware of these requirements and had partly begun to address them. Traditionally this work was done outside the ODP budget but was closely linked into its requirements.
Similarly Alister stated that there were discussions on how to set up procedures to deal with studying drill cuttings as it was unlikely that the riser boreholes would be fully cored. It was also recognised although the implications have possibly not been assimilated, that more than one platform type could be required for operations at a riser borehole site. It was felt by all that 'centres' of operations/expertise are needed and that there has to be much industry/academic liaison.

Wally Svendsen said that it was essential that any new technical committee has a good selection of all the drilling and coring specialists required and that they are called on appropriately. However he also stated that their advice should be acted on properly otherwise they will not give it again. He was concerned that ODP are losing their coring expertise and that the situation with coring operations will deteriorate further if this cannot be addressed. Although ODP TAMU have proved that they can adapt technologies to the programme they appear to be strangely reluctant to approach and address those of the innovative mining industry with the same enthusiasm.

Ted Burgoyne said that there was a continuous requirement to keep abreast of deepwater drilling techniques.

Hugh Ekins felt that the developments with the Slim Riser and BOP together with expandable casing were of direct relevance to ODP and IODP. Using these techniques industry are now doing

exploration with no thought to utilising the same boreholes for development and thus are able to obtain required data much more cheaply.

Ted Moore thought that riser drilling will allow 1 or 2 deep holes per year, industry will have a much more crucial role in how these operations are conducted and each borehole will be a major experiment within IODP. Each riser hole will in effect have a DPG, the operator will take care of the continuity. The first riser DPG will be in place by this year end.

There was a clear consensus from TEDCOM members that there requires to be better integration of 'product development' for the ranked science. This brought in the subject of tool development and testing once more. Jack Baldauf stated that there will be a debate at the next SCICOM on whether more engineering test legs are required or not – clearly they are if science still does not have all the tools required to complete the ranked programme. Issues such as testing on other ships (who pays?), short tests on a science leg at appropriate sites and with appropriate engineers (who takes this to SCICOM? – see the recommendation from this meeting) were also discussed. Industry liaison both to keep abreast of developments and create back-to-back opportunities to a much greater degree that that done presently is required.

12. A.O.B.

Hugh Elkins asked what the status of ODP's agreement with SDS was now that they had been bought over by Halliburton. Leon Holloway was able to state that SDS had only been taken over in part and that ODP agreements with SDS were so far still intact. This raises another issue for the future. It will be important to protect as far as possible agreements and developments with small companies from being sidelined or stopped if such companies are merged or bought out. That could be a difficult issue but one which needs to be addressed to preserve any engineering development from legal complications and delays.

13. Date and venue for next meeting

Skinner stated that he had had a request from the UK ODP to host the next TEDCOM meeting there as it was some time since the UK had done this. He also felt that it may be possible to link this with a visit to Reeves technologies to view some downhole logging tool developments.

Keir Becker the new SCICOM Chair had already intimated that this would be an acceptable venue to SCICOM but they have not yet been formally asked.

Potential dates suitable to all present were in the first week in December. This will be looked into and a firm venue and date** will be circulated with the final draft of this minutes if all approvals are obtained by then.

** Subsequently confirmed as being arranged to be held at the British Geological Survey Headquarters at Keyworth, Nottingham on the 6th and 7th December 2001. More details will follow in due course.