CHAPTER 5

Training, Outreach, and ICDP Support

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5.1 INTRODUCTION

Scientific Drilling addresses fundamental questions of societal relevance including sustainable resources, environmental change and natural hazards. Moreover, scientific drilling projects are partly and, in many cases, even fully financed by science funding agencies and based on taxpayers' money. Therefore, Scientific Drilling actions and outcome must have an educational potential and must be made visible to the public, to media and decision makers in all levels. Furthermore, the recent discussions about new drilling-related technologies such as exploitation of conventional and unconventional gas resources, the utilization of the underground for carbon and hydrogen storage and tapping geothermal energy brought deep drilling into the focus of public's attention. In many countries in the world drilling occasionally has a negative connotation. Education and Outreach are therefore very important to ensure acceptance and must be an integral part of projects from the early stage, on.

5.2 TRAINING

Drilling is the ultimate method to retrieve matter from and yield information about the Earth's interior structure, processes and evolution, but unfortunately drilling is not a topic at most Earth science faculties of universities worldwide. Therefore, an important component of ICDP is the training of Earth scientists, engineers, and technicians in drilling-related know-how and technologies. ICDP offers a suite of different training courses, such as the annual scientific drilling training (see next paragraph), or specific technical course on e.g., geophysical downhole logging, Drilling Information System DIS, Online Gas Monitoring System OLGA, and core logging. PIs can even request ICDP training camps at their respective project drill site.

Fig. 5.1: Training at the drill site

Training Courses

The annual ICDP Training covers all relevant aspects of scientific drilling, including fundamentals of drilling technology, borehole measurements and interpretation, data management, sample

handling and storage, and project management. The training courses are normally 3-5 days long and are free of charge for the attendees (Fig. 9.6.). The courses are held by a team of instructors who are specialists in their fields and with an extensive practical experience. Most of them have been involved in different ICDP projects worldwide. Specialists from the industry or scientific institutes will be engaged for special topics or individual courses if necessary. The current basis of the ICDP training is a set of eight courses covering the topics:

- Fundamentals of Drilling Technology
- Fundamentals of Sampling, Cores and Cuttings, On-site Sample Handling
- Drill Core Scanning and Logging
- Downhole Gas and Fluid Sampling and Monitoring
- Downhole Logging Fundamentals and Application
- Data and Information Management
- Project Planning, Management, Education and Outreach
- Downhole Seismic Monitoring

Fig. 5.2: On site tool inspection during training

The training can be adapted to specific topics, depending on the themes covered by upcoming drilling projects. ICDP publishes calls inviting interested individuals to apply for the annual Training Course on the Website, via Social Media and by ICDP Newsletters about six months prior to the event. PIs and scientists who intend to serve during planning and operation of upcoming projects are especially encouraged to apply for these training courses. Courses are preferably carried out at active ICDP drill sites and are taught by engineers and scientists who are experienced in scientific drilling. ICDP has allocated funding for invited participants to cover costs, such as travel and accommodation. ICDP encourages PIs to consider a comprehensive training course at or nearby any proposed drill site. This course will be jointly organized on project-related topics.

Fig. 5.3: Specific training on Online Gas Analysis

In order to support proponents, engineers, and scientists for their specific tasks within their drilling project we provide a number of training courses or workshops on request. For ICDP projects, we recommend to already apply for it in the workshop proposal and at least in the full proposal. These specific trainings include

- Drill Core Scanning & Logging
- Online Gas Analysis
- Downhole Logging

Please note that Data and Sample management training is mandatory 2-6 months prior to drilling. For this, PIs will be contacted directly by the ICDP-OSG Data Management Team.

5.3 OUTREACH AND CAPACITY BUILDING

Unlike oceanic drilling, continental drilling activities are visible to the local public and communicated through local, regional, and possibly national and international media before and during drilling takes place. Informing and involving the local public through public activities at any stage of planning and execution of drilling plays a critical role in the successful implementation of a continental scientific drilling project.

Media

TV, radio and press can be duplicators of great importance for science and require attention by a drilling project manager in charge in any case. Proactive information to embed media about a project is usually the best approach to deal with public attendance. In addition, printed materials and web-based information can be used to reach neighbours and the community surrounding a drilling experiment. If goals, methods and risks are communicated in an open and transparent way, credit can be gained in the public (Fig. 9.1).

Drill site visit

Acceptance by authorities, politicians and landowners is a decisive prerequisite for scientific drilling projects while drill rigs are landmarks attracting a great deal of local attention. Invitations to guided tours for school classes and open house activities will reach the neighbouring community best. Further target audiences for these and similar public outreach measures include funding organizations, stakeholders, politicians, media, educatio-nal organizations and the public at large.

An open house is a great opportunity for the public not only to have a look 'behind the scenes' but also for the project to generate positive public and media interest and to address potential negative prejudice upfront. Furthermore, it allows emphasizing scientific aims and societal benefit.

Fig. 5.4: Interview at the drill site

Open House activities - Action items

- Arrange date and terms with drilling contractor, permitting authority and landowner as early as possible
- Make sure that an open house will neither interfere with drilling operations nor jeopardize safety
- Inform local and regional media (press, radio, TV) to invite the local community, local politicians and landowners
- Invite neighbours, schools and locals via flyers at public places
- Do not forget to invite representatives of funding agencies, authorities, politicians and other decision makers
- Announce the 'Open House' on social

media (see next paragraph)

- Provide information on how to reach the drill site, about nearby service facilities and infrastructure (next gas station, restaurant, supermarket, mobile phone reception)
- Prepare sufficient parking space for the visitors´ cars at the drill site
- Keep a sufficient number of hard hats and, if needed, safety goggles and safety boots ready
- Display drilling in action such as rotating drill strings, circulating drilling mud but avoid a visit during risky operations
- Organize group tours over the drill site by guides familiar with drilling techniques and scientific objectives
- Tours can be guided preferably by PIs, their drilling supervisor and possibly personnel of the drilling company (Fig. 9.2)
- Pay special attention to school classes and their teachers as an important target group for science outreach
- Display informational materials such as project flyers and organize give-aways
- Get in contact with OSG for ICDP brochures, flyers and other media on scientific drilling

Project website and social media

ICDP will create a project website for each project as soon as a workshop proposal is approved by ICDP. As part of the MoU (Memorandum of Understanding) between ICDP and the project PIs, the project is encouraged to provide daily news during the operative phase for this website which mostly serves as information platform for the science community. In addition to the specific ICDP project website, social media (SM), such as Facebook, Twitter and blogs, have extensive potential of sharing information to a general audience at very little monetary costs. It will be necessary to keep such media regularly updated during the operational phase of a project with emphasis on project success, but not drawbacks.

Fig 5.5: A guided tour of the drill site helps visitors to understand the drilling process

Attracting a broader readership outside science requires content that is not too complex for the average person, full of jargon or acronyms, or might cause adverse attitudes against the drill project. Social media can serve as a platform to share information about other project-related outreach activities.

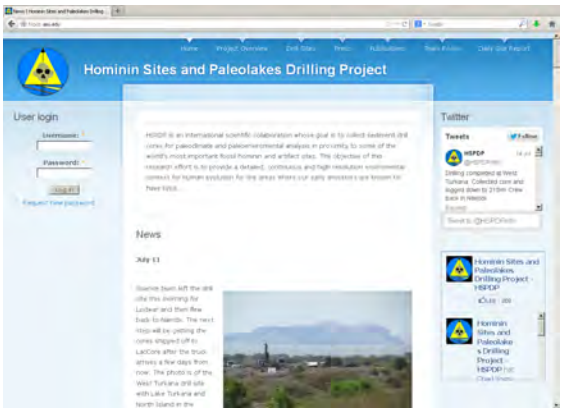

Fig. 5.6: Social media page of the Hominin Sites and Paleolake Drilling Project in Kenya, Ethiopia

A few general guidelines should be observed on posting messages from ICDP scientific drilling projects on the internet:

A message consists of text (including headline and subtitle) and possibly additional media (images, videos, audios, documents, links to relevant sources). The message is a text that gives the reader an idea of what is going on, what happened since the last post and should always include a minimum set of metadata such as:

- title
- date and time
- name(s) of the author(s)

Additional media should have

- a short caption which directly refers and describes the content shown
- including credits to the creator(s)
- if possible, the media should be shown in a preview style like a thumbnail and/or a link to the media to open or to enlarge it in a separate browser window or lightbox
- in general, a download of these media should be allowed

Usually, a larger number of collaborators are involved in an ICDP scientific drilling project. Social media (topmost twitter and facebook) are an easy way to upload content from many different distributed sources and present it in the way described above. But it also allows adding content on-the-fly easily and quickly. Therefore, it is very important that a responsible editor should supervise and overlook these proceedings. Collections of excellent images without a context to a general message, without captions explaining the image in few words do not help readers/viewers, who, although at times basically involved, have no deeper insight into the particular event.

Beside the credits to the creator(s) the content of a social media page or posts for an ICDP scientific drilling project should be made available for re-use through a Creative Commons (CC) license:

-  allows to modify it for non-commercial use applying the same CC license conditions
-  allows to modify it, commercial use is allowed by applying the same CC license conditions

See more about Creative Commons (CC) licenses at: https://creativecommons.org/. Also see the corresponding license agreements and regulations of the particular social media provider you are using.

Press release

A press release (or, more general, media release) is a written or recorded communication directed at members of the news media for the purpose of announcing something ostensibly newsworthy. Typically, they are mailed, emailed or faxed to assignment editors at newspapers, magazines, radio stations, television stations, or television networks. A press release can be useful to generate public interest in your project in particular at the beginning of drilling operations. It generally serves to answer questions of what, why, when, where and who. It can be organized such as a pyramid with key information at the top and more details at the base. The less relevant information at the end of the body text will possibly be shortened by media writers if used for a newspaper article. The text should consist of 4 to 5 paragraphs with a word limit ranging from 400 to 500 followed by contact information and web link. High-resolution photos available for media use should be provided as well. Press officers of university associated with the project will help to prepare and publish a press release.

Video documentation

A well-produced video documentation on a drilling project serves as science outreach tool presented at schools, universities, meetings of all kinds, conferences and to the general public, possibly also included on nationally syndicated broadcast services (TV, Radio, etc.). A short trailer (1-2 min.) is especially useful for online video platforms such as Youtube. On the ICDP website several science movies on ICDP drilling projects are displayed. The videos were produced with financial support through ICDP and other co-funding agencies (Fig. 5.7). Funding for the movies was granted based on a proposal to ICDP. The Operational Support Group will provide information about video production companies.

Fig. 5.7: Video documentation at drill site (Koyna, India)

Outreach to the science community

ICDP unites a growing, large science community of about 3000 individuals all over the world. This diverse Earth science community engaged in scientific drilling spans many very different fields of expertise whose protagonists do not communicate with each other automatically. Sharing information about the program and promoting interaction is therefore a must. ICDP carries out Town Hall meetings at international conferences such as AGU and EGU to inform the scientific drilling community about the status of the program and current or upcoming scientific drilling activities. These meetings are a good opportunity to make scientists aware of upcoming drilling projects and the possibilities for collaborations. PIs and leading scientists from current or future continental scientific drilling projects are invited to use this occasion to communicate and deliver important news or messages to the community.

Scientific sessions at major conferences are another tool to address the science public. ICDP and IODP/ECORD regularly carry out a joint scientific drilling session at the EGU meeting, where new technical developments and scientific results about completed and current drilling projects are presented. Conferences and workshops can be used to increase awareness through outreach material (flyers, posters, brochures). At large Earth Science conferences a booth is often set up by ICDP in partnership with IODP to provide information and display instruments and videos on operations, technologies and projects.

The journal Scientific Drilling is an open access journal jointly issued by ICDP and IODP and published semi-annually by COPERNICUS Publications. Scientific Drilling (SD) is a multi-disciplinary journal focused on bringing the latest news about scientific drilling – especially scientific-technical expedition-reports – to the community. It delivers peer-reviewed science reports from recently completed and ongoing international scientific drilling projects as well as on engineering and other technical developments on ocean and continental drilling, workshops, progress reports, and includes short news

sections for updates about community developments.

As part of the MoU, PIs are requested to submit a workshop report to SD after the workshop and a science report after drilling was completed. Both reports are to be published in one of the two volumes of SD issued after the workshop was held respectively drilling was completed. For submission details see the Scientific Drilling website.

Fig. 5.8: The ICDP-IODP Open Access Journal 'Scientific Drilling' is published semi-annually

5.4 COMMUNICATION MANAGEMENT

'The news media could be described as one of the worst ways to explain science, given its fast turnover, tight deadlines and space constraints. However, there are very good reasons for using this as a medium to get your messages about science across' (www.sciencemediacenter.org).

Popular media, such as television, radio, newspaper, magazines, and internet blogs, play a vital role in communicating science to the public and are critical to the process of dialogue and engagement. Today the vast majority of ordinary people gain knowledge about scientific and technical progress from news delivered by popular media and form their own opinion based on the provided information. Scientists are in a position of having a professional responsibility to communicate their research with popular media as the major pathway to reach out to the public and stakeholders.

However, the interaction between scientists and media representatives or journalists is often described as difficult and unsatisfying – from both sites (see e.g., Maillé et al., 2009, and references therein). A different perception of their specific role in the process of communicating science to the public sometimes results in struggle for control over the communication process (Peters, 1995). It is therefore crucial that scientists understand the role of media and how media outlets operate to avoid misunderstanding by the media and miscommunication to the public.

Fig. 5.9: Media briefing at the drill site

Journalists would define themselves as (i) translator to popularize science to the general public and (ii) bearer of society's questions. Their job is not to represent scientist's interest. Journalists are in the business of defining and selling news and are in competition with other media representatives. They also want to entertain and, depending on their self-conception, also present critical or even polemic viewpoints. According to their understanding, the scientist's role is to deliver information and facts, not to put them in a societal or other relevant context. Being under time constraints, it is difficult for journalists to deal with complex settings and situations that cannot be described in a simple 'black or white' scheme. This may result in oversimplification and inaccuracy.

The following guidelines have been developed to provide scientists involved in ICDP projects a helping hand when receiving requests for interviews or when they feel a need to inform the public about important findings of their research or about critical events, e.g., accidents or delays.

Before any contact with media

- Coordinate your media interaction with all parties involved in the project beforehand
- Any statement to the press about the project, its aims and objectives, progress, success and challenges, should be issued by the Principal Investigators or somebody on behalf of them (e.g., an external consultant/company person for technical and non-scientific questions)
- If others than PIs (on-site scientists, students) are contacted by media representatives, they should always refer to the PIs as contact partner for the media
- The media officer of your organisation should be informed about any approach by media. You can always ask him/her for advice if you are not familiar with communicating with media and interviews.
- Coordinate with the other PIs what message should reach the public and what information should remain confidential. If any information is confidential do not write about it in emails to other PIs as such emails tend to get forwarded and then develop destructive power. Instead of writing, talk on the phone to your colleagues about potentially critical information.

Preparation for an interview

- Think positive! Consider an interview as a great opportunity to spread the word about your project and inform the public
- Get to know the medium that requests an interview. What is their target audience and which standpoints do they take?
- Ask before the interview if other scientists will be interviewed on the same topic
- Consider that a request for an interview about an inoffensive topic may serve as a door opener to ask problematic questions in front of a rolling camera
- An interview is a stress situation for both the journalist and the scientist. You can lower your stress level by preparing yourself with 2-3 statements

that you want to deliver to the public. Have your facts ready at hand.
- In general, interviews on scientific issues are less problematic than interviews on e.g., politics or finance. The usual attitude of science journalists is friendly and pro-science (for other cases, see below).
- Be aware that media outlets are under considerable financial pressure, meaning that journalists either do not have much time to prepare for an interview or they are not science journalists but interns or rookies. Therefore, don't be annoyed by seemingly uneducated questions.
- It helps to write down three key messages you want to bring across (writing in longhand is more helpful than typing)

During the interview

- Make yourself aware that your audience is the public probably including those taxpayers funding your scientific drilling project.
- Underline the relevance of your research for the general public. Your audience is not the media representative or your scientific community.
- Make your statements short, simple, clear and in a generally understandable form. Avoid acronyms and scientific language. Imagine yourself explaining your project to your grandparents.
- Make clear in the interview if your results are at preliminary stage, yet have to be published in a peer-reviewed journal, or differ from those of other scientists.
- Description of methodology is important for the science community, not for the general public.
- Be self-confident. Remember that the media choose you as interview partner because you are the expert in the respective field.
- Dress neatly and avoid wearing anything that may be distracting on screen, e.g., brightly patterned shirts (Moiré) or cartoon ties.
- Avoid referring to previous questions ('as I said before') because this makes it harder to edit.
- Don't be afraid to repeat whatever key messages you want to convey.

Risk communication in crisis situations

Communication about drilling is a critical issue. People tend to select and interpret information in order to support their existing worldview and drilling received some negative attitudes after some disasters and accidents in the past (Deepwater Horizon disaster in the Gulf of Mexico, drilling-induced seismicity and the on-going debate about fracking).

- Be prepared for questions about drilling safety and risks and take questions about risks and hazards seriously
- Avoid appearing arrogant and all-knowing
- Be aware that the scientific definition of risk (statistical probability of an event x hazard potential of an event) does not match with ordinary people's thinking about risks. One way of putting risk into a more understandable context is to make comparisons between the actual risk and one that is more familiar to the people.
- For video interviews with potential negative content (e.g., about accidents, unforeseen incidents): try to avoid lurid reporting. Look for a neutral background with no victims or ruins, no company/project logos, etc.
- In a crisis situation, ask your media officer if a press release prior to an interview would be beneficial. You probably don't want to attract additional attention during a crisis situation. On the other hand, issuing a press release together with your media officer before media requests can give

you some momentum and control about the next steps of the communication process.
- In cases of critical events or crises, e.g., accidents, you should always include your media office. Don't shy back from asking them to be present during the interview. It also helps to rehearse interviews with your media officer.
- If there are casualties, don't hesitate to show your concern for the injured or dead people and their families. Everyone will understand that you are nervous or reluctant on such occasions.
- It is perfectly okay to admit that you do not have all facts in a crisis situation.

Consider the following phrases for your interview in a crisis situation as do/do not:

Say:
- The following has happened…
- We are working hard to find a solution (or: We are working hard to investigate what led to the situation)
- Next steps to be taken are…
- Right now, we can't tell you more, but additional information will be provided as soon as we have it (avoid specific dates)
- I can see your point

Don't say:
- You don't understand
- We don't understand
- I fully agree with you/your point
- You are wrong
- The subject was blown up by the media
- We need more time
- We will provide more information by tomorrow (or any other exact date) as you are then under some obligation to deliver at this point
- No comment

Recommended further readings

Maillé, M.-È., J. Saint-Charles and M. Lucotte (2009). The gap between scientists and journalists: the case of mercury science in Québec's press. Public Understanding of Science 19(1): 70-79.

Peters, H.P. (1995). The Interaction of Journalists and Scientific Experts: Co-operation and Conflict between Two Professional Cultures, Media, Culture and Society 17: 31-48.

Peters, H. P. (2013). Gap between science and media revisited: Scientists as public communicators. Proceedings of the National Academy of Sciences of the United States of America, 110 (Suppl 3), 14102–14109. doi.org/10.1073/pnas.1212745110

MESSENGER (Media, Science & Society - Engagement & Governance in Europe Guidelines) Guidelines for Scientists (http://www.sirc.org/messenger/messenger_guidelines.pdf)

http://www.sciencemediacentre.org/wp-content/uploads/2013/08/SMC-Why-Engage-2015.pdf