

Long-term subsidence study in the Wadden Sea Region

Bestuur

Prof. dr. Pavel Kabat (voorzitter)
Prof. dr. Jos Bazelmans
Prof. dr. Jouke van Dijk
Prof. dr. Peter Herman
Dr. Hessel Speelman

To: NAM, Steering Committee (SC) members
From: B. Orlic
Date: 30 November 2013
Subject: Minutes of the 2nd Steering Committee Meeting,
Leeuwarden, 28-29 October 2013

Filename: [01-Minutes-2-SC-meeting-28-29Oct2013-public.docx](#)

Legend: => Action points NAM

Distribution list:

NAM: Antony Mossop, Pieter van de Water, Dirk Doornhof, Ruud van Boom,
Hermann Bähr, Harry Piening, Wim van der Veen

Steering Committee (SC) Members: Hessel Speelman, Ramon Hanssen, Patrick
Baud, Robert Zimmerman, Ryszard Hejmanowski, Rune Holt, Adrian Houtenbos,
Bogdan Orlic

State Supervision of Mines (SSM): Jan van Herk, Hans de Waal, Annemarie
Muntendam-Bos

Wadden Academy: Klaas Deen

Attendance:

All the members of the Steering Committee attended the meeting except R. Hanssen
(apologies received).

Material distributed before the meeting:

A progress report prepared by NAM was distributed 10 days before the meeting to
the SC members and the SSM.

Action points from the previous meeting (the 1st SC meeting held in April 2013 in Amsterdam):

=> NAM is requested to provide information package with the existing key technical
documents to the Steering Committee, to familiarize themselves with the problem.
This information will be made accessible through a sharepoint arranged by the
Wadden Academy.

A few relevant papers have been uploaded to the sharepoint, but this action point is
still open as additional information is sought.

=> NAM is requested to consider the questions that fall within the scope of the
Subsidence study raised in the written comments and provide its response before 1
June 2013.

This action point was dealt with during NAM presentation of research progress at the
meeting.

=> NAM is requested to provide a progress report to the Steering Committee 4
weeks before the next meeting (before 1 October 2013).

A progress report was provided before the meeting and this action point was closed.

Meeting objectives

- Day 1: 28th October
 - 1) **The research progress meeting** was held to get an update on research activities undertaken by NAM over the past 6 months and to give NAM feedback on the on-going research activities and near future plans (covering the next 6 months).
- Day 2: 29th October
 - 2) **The technical workshop** was held with the objective to discuss various topics possibly relevant for the understanding of anomalous time-dependent subsidence. Each of the Steering Committee members gave a presentation on a self-chosen relevant topic. The representatives from the SSM gave the view of the Regulator and the reasons why this subsidence study was initiated.
 - 3) **The stakeholder meeting** in the afternoon was held with the objective to inform the stakeholders on project progress.

Agenda

- The 2nd Technical meeting was held on 28 and 29 October 2013 in Leeuwarden, in the building of the Wadden Academy (*Huis voor de Wadden*).

Agenda 28/10:

- 12:00-13:00 Arrival and joint lunch for the Committee members, NAM experts and the SSM representatives.
- 13:00-13:20 Introduction and procedural issues by the Chairman.
- 13:20-15:00 Presentation of research progress by the NAM experts – Tony Mossop and Hermann Bähr
- 15:00-15:20 Refreshment break.
- 15:20-17:30 Presentation of research progress by the NAM experts – Tony Mossop.

Agenda 29/10:

- 09:00-10.15 Technical presentations by A. Muntendam-Bos (SSM), P. Baud and R. Hejmanowski, 20 min each + 5 min discussion, on a topic relevant to time-dependent production-related subsidence.
[07-Baud-2-SC-meeting-public.pdf](#)
[08-Hejmanowski-2-SC-meeting-public.pdf](#)
- 10:15-10:30 Coffee break.
- 10:30-11.45 Technical presentations by R. Holt, A. Houtenbos and R. Zimmermann, 20 min each + 5 min discussion, on a topic relevant to time-dependent production-related subsidence.
[09-Holt-2-SC-meeting-public.pdf](#)
[10-Houtenbos-2-SC-meeting-public.pdf](#)

11-Zimmerman-2-SC-meeting-public.pdf

- 11:45-11:55 Coffee break.
11:55-13:00 Discussion.
- 13:00-14:00 Joint lunch for the Committee members, NAM experts, the SSM representatives and the stakeholders.
- 14:00-16:00 Stakeholders meeting aimed to communicate research progress to the interested parties and the public (invitees: Dutch nature conservation organizations – Waddenvereniging, It Fryske Gea, Staatsbosbeheer, etc.).

Meeting highlights

- The SSM representatives explained their motivation to initiate the subsidence study, the study objectives from the Regulator's point of view and the conditions under which the study has to be conducted. The ultimate objective is to realize a state-of-the-art scientific study that improves the knowledge of production-related subsidence which has occurred in the Wadden Sea Region, with the aim of improving subsidence predictions within well defined uncertainty bounds.
- NAM presented an update on the research activities undertaken in different parts (work packages) of the research program, as explained in more detail below.
- NAM has made an agreement with Utrecht University to fund a postdoc research student to investigate the influence of salt caprock creep flow on anomalous time-dependent subsidence. .
- NAM presented plans on geodetic research, which will be conducted in cooperation with a postdoc at TU Delft. A more detailed proposal will be worked out by the NAM and TUD researchers in the coming weeks. The geodetic subcommittee meeting will be scheduled in January-February 2014 to review the detailed proposal on geodetic contribution to this research project.
- NAM presented the progress in identifying the discrepancies in the various subsidence analytic and semi-analytic modelling approaches. Some of the discrepancies were identified during the previous SC meeting and NAM has accordingly addressed them in the meantime.
- NAM is about to start the rock mechanics test program in the rock mechanics lab at Shell Rijswijk. The aim of the experimental program is to determine the long term compaction behaviour of the Rotliegendes reservoir formations. The initial version of the rock mechanics test program was presented by the NAM researchers and discussed during the meeting.
- The review panel provided valuable comments on the rock mechanics testing program presented by NAM. The suggestions for program improvement provided by the SC members will be taken into account to adjust the experimental program. The adjusted program will be circulated

to the SC members and discussed during the next telecon meeting on the 2nd of December 2013.

- The stakeholder meeting was held to communicate research progress to the interested parties and the public. The presentations were given by the SSM, NAM and the SC Chairman to the representatives from the Waddenvereniging present at the stakeholder meeting.

Requests and Action points NAM

=> **Rock mechanics test program**

NAM is requested to prepare the test program proposal for the first part of the rock mechanics tests and make it available to the SC members and the SSM before the telecon scheduled for the 2nd December 2013.

=> **Progress report**

NAM is requested to prepare a progress report and make it available to the SC and SSM by the 14th of March 2014 (about 3 weeks before the 3rd SC meeting).

=> **Reports on subsidence modelling**

Selected reports and case histories on subsidence modelling in the Wadden Sea Region should be made available to the SC members via the SharePoint.

Next meetings

The telecon is scheduled for the 2nd of December 2013 at 10:30 CET.

The objective of this meeting is to discuss the test program proposal for the first part of the rock mechanics tests to be performed by NAM.

The Geodetic subcommittee meeting on Geodetic contribution to this research project will be organized in January-February 2014 with the objective to review the related NAM and TUD geodetic proposals. This will be a Geodesy sub-committee meeting with the SC members serving as geodetic experts, the NAM and the TUD researchers, and the SSM.

The 3rd Steering Committee meeting is scheduled for 3 and 4 April 2014.

The meeting will be held at, or close to, Shell Rijswijk. The objective of this meeting is to get an update on research activities undertaken by NAM and to give NAM feedback on the on-going research activities and near future plans. Visit to the rock mechanics lab at Shell Rijswijk is recommended and would be highly appreciated by the SC, SSM and stakeholders.