MINUTES OF MEETING



FLACS USER GROUP MEETING

Place: Fantoft, Bergen, Norway (premises of GexCon)
Date: 6-7 May 2008
Prepared by: Prankul Middha and Hans-Christen Salvesen
Distribution: FLUG mailing list

List of Participants

Name	Organization	Country
Noela Vazquez	Gaz de France	France
Jerome Hoquet	IRSN	France
Clément Lapierre	Total	Norway
Rasmus Nilsson	DNV	Norway
Prankul Middha	GexCon	Norway
Hans-Christen Salvesen	GexCon	Norway
Vegeir Knudsen	DNV	Norway
Øystein Spangelo	Scandpower	Norway
Jerome Renoult	Xafe	Norway
Idar Storvik	GexCon	Norway
Jens Melheim	GexCon	Norway
Olav Roald Hansen	GexCon	Norway
Ole Jacob Taraldset	GexCon	Norway
Mathieu Ichard	GexCon	Norway
Trygve Skjold	GexCon	Norway
Sverre Nodland	Scandpower	Norway
Stian Høiset	StatoilHydro	Norway
Bjørn Arntzen	UIB / GexCon	Norway
Daniel Mahoney	Atkins	UK
Michela Oliveira	BMT	UK
Chris Savvides	BP	UK
Maggie Wang	BP	UK
Suzanne Shaw	MMI	UK
Tim Jones	MMI	UK
Prithvi Pal	Vectra	UK
Craig Pregnalato	WBMPL	Australia
Torunn S. Davidsen	GexCon	Norway
Kees van Wingerden	GexCon	Norway
Are Bratteteig	GexCon	Norway
Jan Roar Bakke	GexCon	Norway

FLUG meeting 6-7 May 2008

FLUG Chairman: Chris Savvides, BP.

Day 1: 6 May 2008

Welcome & introduction.
Olav R. Hansen, GexCon, welcomed all participants to the 2 day FLUG meeting.

FLACS-v9.
Essential aspects including new features of FLACS v9 were presented, covering among others:
Runmanager
CASD
FLACS simulator
Flowvis
License manager and network/PC configuration
Geo2flacs
Expected updates
Manual

A user wish was raised to include an undo/redo functionality in CASD. This is in principle possible, but is a large task to implement.

Pool spread model, fire modelling, DDT prediction models.
Mathieu Ichard, GexCon, gave a presentation about pool spread modelling in FLACS v9. The model includes among others 2D shallow water governing equations. Jens Andreas Melheim, GexCon, presented status on fire modelling in FLACS (FLACS-FIRE). A test release is available, further modelling work and validation will be done. Prankul Middha, GexCon, gave a presentation on DDT prediction models in FLACS.

FLUG homework exercise.
The FLUG homework exercise was discussed by Prankul Middha, GexCon. Comparison of simulated results and experimental data was presented for GexCon's simulations. Comparison between results of all simulations was also shown. Comment: For future exercises GexCon may consider to include a case where all steps from geometry import to presented results are covered.

Formal FLACS user group meeting: Day 2, 7 May 2008.

Chairman Chris Savvides, BP, welcomed to the meeting and gave an overview of the agenda. Minutes from earlier FLUG meeting 16th November 2007 in Paris, were adopted. The importance of following up FLUG wishes (improvements of FLACS, etc.) was emphasized.

Equivalent gas cloud concept

Olav R. Hansen, GexCon, gave a presentation on how the so-called equivalent gas cloud concept (including among others the so-called Q9 cloud) can be used in probabilistic explosion analysis using FLACS. Chris Savvides, BP, commented that overpressures may in some cases be underpredicted using the Q9 cloud, he finds the [LFL:UFL] equivalent gas cloud OK to use. Jérôme Hocquet, IRSN, asked how good the pressure impulse is estimated when using the Q9 cloud. Olav R. Hansen, GexCon, commented that he expected it in general to be fairly good represented, may be less good in open area geometries.

Maggie Wang, BP, gave a presentation based on their experience in BP on how the experimental overpressures compare with those predicted by FLACS when using the Q9 cloud, the [LFL:UFL] equivalent gas cloud and the [>LFL] cloud (concentration larger then Lower Flammability Limit). The study of BP seems to indicate that in their case using the Q9 cloud gives underprediction of overpressure, the [>LFL] cloud overprediction, and the [LFL:UFL] cloud something in between, relatively close to the experimental data. Comment: Further documentation from GexCon on validation of the methodology using the Q9 cloud, is wanted. Chris Savvides, BP, commented that a non-biased approach is preferred, and the [LFL:UFL] cloud is in general quite large and easy to place properly in the geometry considered.

Jan Roar Bakke, GexCon, referred to an earlier study on an offshore-geometry where the overpressure where slightly conservative using the Q5/Q9 cloud, somewhat more conservative when using the [LFL:UFL] cloud, and somewhat even more conservative when using the [>LFL] cloud. Olav R. Hansen, GexCon, commented that it was not clear if BP had followed GexCon's guidelines with respect to shape and position of cloud and choosing a conservative position of ignition. This was discussed in the May 2007 FLUG meeting, and that this would likely have a significant impact on their conclusion. However, he agreed to the comment that GexCon should make those recommendations more visible.

Stian Høiset, StatoilHydro, challenged GexCon to work through the same exercise as BP (presented by Maggie Wang), and see how the results will be when GexCon use the methodology according to guidelines recommended by GexCon. And also include recommended guidelines in the FLACS User's manual (not only FLUG presentations). Jerome Renoult, Xafe, commented that it would be interesting to look at the same BP exercise also considering the pressure impulse (integration of pressure with respect to time). Chris Savvides indicated that they the impulse was also underpredicted using the Q9 cloud.

Error reports and potential weaknesses

Prankul Middha, GexCon gave a presentation on some recent error reports and potential weaknesses in FLACS. Work has already been initiated to fix them and better models will be shared with FLUG when available.

User presentations

Jerome Renoult, Xafe, gave a presentation where an animation/movie demonstrated the FLACS results. Stian Høiset, StatoilHydro, told that VR-FLACS has been used for educational purposes. Øystein Spangelo, Scandpower, shared some experiences simulating hydrogen explosion in confined geometry. He wishes further guidelines and recommendations included in the User's manual on hydrogen explosion using FLACS and the possibility for DDT. It was commented that using current FLACS v9 simulating hydrogen explosion, the user should be careful if the Control Volume size (of the numerical grid) is less than 1 cm (seems that the turbulence model need to be improved in such cases).

Future R&D and internationalization plans.
Olav R. Hansen, GexCon, gave an overview on future R&D plans for GexCon. In this regard, discussion of a potential Joint Industry Project (JIP) was initiated.

Development plans for FLACS: Input from users
Stian Høiset, StatoilHydro, commented that interesting areas for further development of FLACS include two-phase dispersion, heavy gas dispersion over terrain, and FLACS consolidation in general. Prithvi Pal, Vectra Group, would like an easy tool/help to estimated (in advance) how long time it takes to run a simulation (based on grid, CFL numbers, CPU, etc.), and also better tools/functions to more easy make proper numerical grid, including grid refinement around leakage jet axis (automatic gridding functionality). Question about the possibility to see porosity values in an ascii file was raised. Chris Savvides, BP, commented that an updated list for wishes (improvement in FLACS, etc.) properly systemized, would be beneficial.

Next FLUG meeting.
Next FLUG meeting is planned 6-7 November 2008. Comment: An interesting topic for next FLUG meeting would be about methodology when using FLACS, as applied by the different FLACS users representing different companies. Suzanne Shaw, MMI, commented that this could include methodology for deciding blast loads being used in structural analysis.

End of meeting
Chris Savvides, BP adjourned the meeting and thanked all the participants.

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