



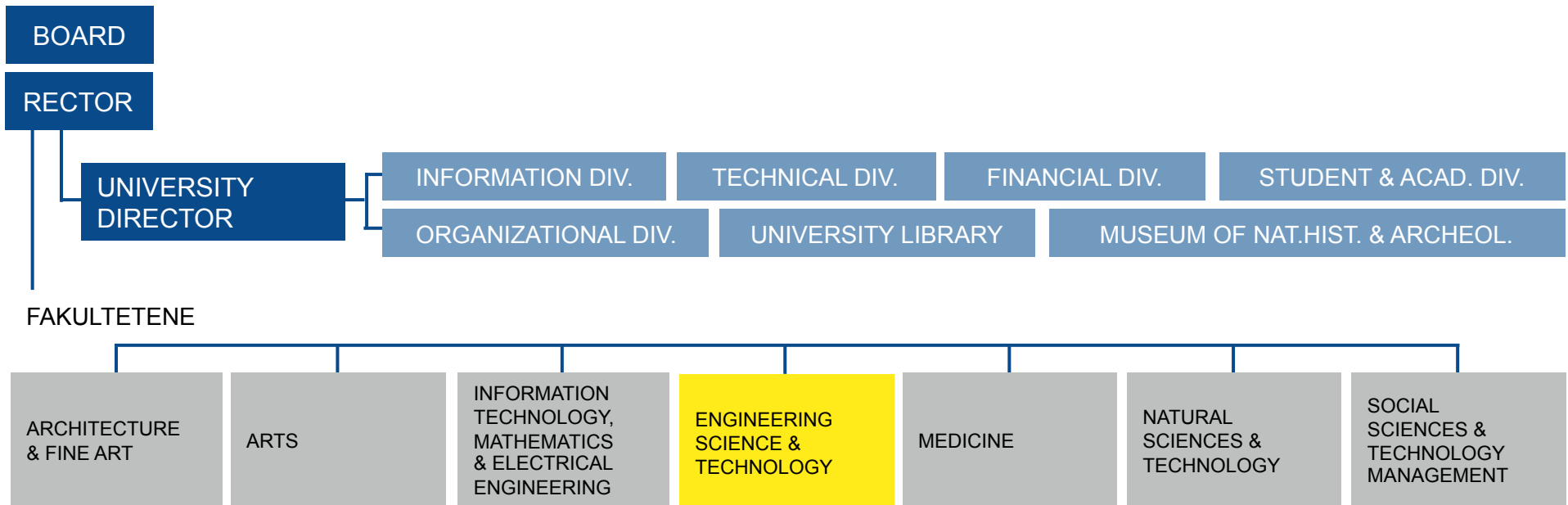
*Norwegian University of  
Science and Technology  
Trondheim, Norway*

*<http://www.ntnu.no>*

# NTNU Campus Photos



# Organizational chart of NTNU



## *NTNU key figures (2007)*

*53 departments in 7 faculties*

*NTNU Library; Museum of Natural History and Archaeology*

*58 500 student applications*

*- of which 9 700 have NTNU as their first choice*

*20 000 registered students, 6500 admitted*

*3 300 degrees awarded*

*270 doctoral degrees awarded*

*4 200 person-years*

# *Cooperation with SINTEF*

*SINTEF is one of Europe's largest independent research organizations*

*Turnover NOK 1.7 billion, 1850 staff (500 in Oslo)*

*Established in 1950 as the contract research organization of the Norwegian Inst. of Technology*

*Contract research in technology, natural sciences, medicine and social sciences*

*Cooperates with NTNU in terms of staff, equipment, laboratories and dissemination*

*15 Gemini Centres for joint NTNU/SINTEF R&D*

*Many NTNU staff are permanent SINTEF advisers*

*Many SINTEF staff are adjunct professors at NTNU*



*Petroleum Education and  
Research  
at  
The Norwegian University of  
Science and Technology  
Trondheim, Norway*

*<http://www.petroleum.ntnu.no>*

*Gløshaugen and Lerkendal Stadion in the middle,  
Petroleum Center (SINTEF & NTNU) at lower right*



## *Brief statistics of petroleum education at Norwegian University of Science and Technology*

- established in 1973*
- first class graduated in 1974*
- More than 2000 graduated sivilingeniørs and M.Sc.'s during 1974-2009*
- More than 100 graduated Ph.D.'s during 1977-2009*
- around 80 M.Sc.'s graduate per year*
- around 10 Ph.D.'s graduate per year*
- currently around 90 full-time teachers, staff, researchers*
- around 300 students enrolled at upper B.Sc. and M.Sc. levels*



# *Upstream part of the petroleum activities*

# *Upstream Petroleum Curricula at NTNU*

*Department of Petroleum  
Technology and Applied  
Geophysics*

*Department of Geology and  
Mineral Resources  
Engineering*

*Petroleum Geology*  
*Petroleum Geophysics*  
*Drilling Engineering*  
*Reservoir Engineering*  
*Production Engineering*

# Professors

Petroleum Technology			Petroleum Geoscience	
<b>Drilling</b>	<b>Production</b>	<b>Reservoir</b>	<b>Applied Geophysics</b>	<b>Geology*</b>
E. Fjær <sup>2</sup> R. Holt A. Rødland S. Sangesland P. Skalle	H. Asheim M. Golan J. Gudmundsson H. Herfjord <sup>1</sup>	S. Dale <sup>2</sup> T. van Golf-Racht <sup>1</sup> O. S. Hustad <sup>2</sup> T. Aa. Jelmert J. Kleppe O. Torsæter C. H. Whitson	P. Afseth L. Amundsen <sup>2</sup> B. Arntsen J. Ebbing <sup>2</sup> C. Kenter <sup>2</sup> H. Langeland M. Landrø O. B. Lile <sup>1</sup> C. Puigdefabregas <sup>2</sup> J. S. Rønning <sup>2</sup> A. Stovas E. Tjøland B. Ursin	S. O. Johnsen S. Lippard M. B. E. Mørk R. Sinding-Larsen A. Mørk <sup>2</sup>

- 1) *emeritus*
- 2) *adjunct (20%)*

*\*At Department of Geology and Mineral Resources*

# *International M.Sc. and Ph.D. Programs*

- *English Language Instruction*
- *40% non-Norwegian Students in M.Sc. Program*
- *50% non-Norwegians in Ph.D. Program*

*Many Ph.D. candidates*

*Currently, more than 70 Ph.D.  
candidates are enrolled in the areas of  
petroleum exploration and production*

# *Key academic research programs in the upstream field*

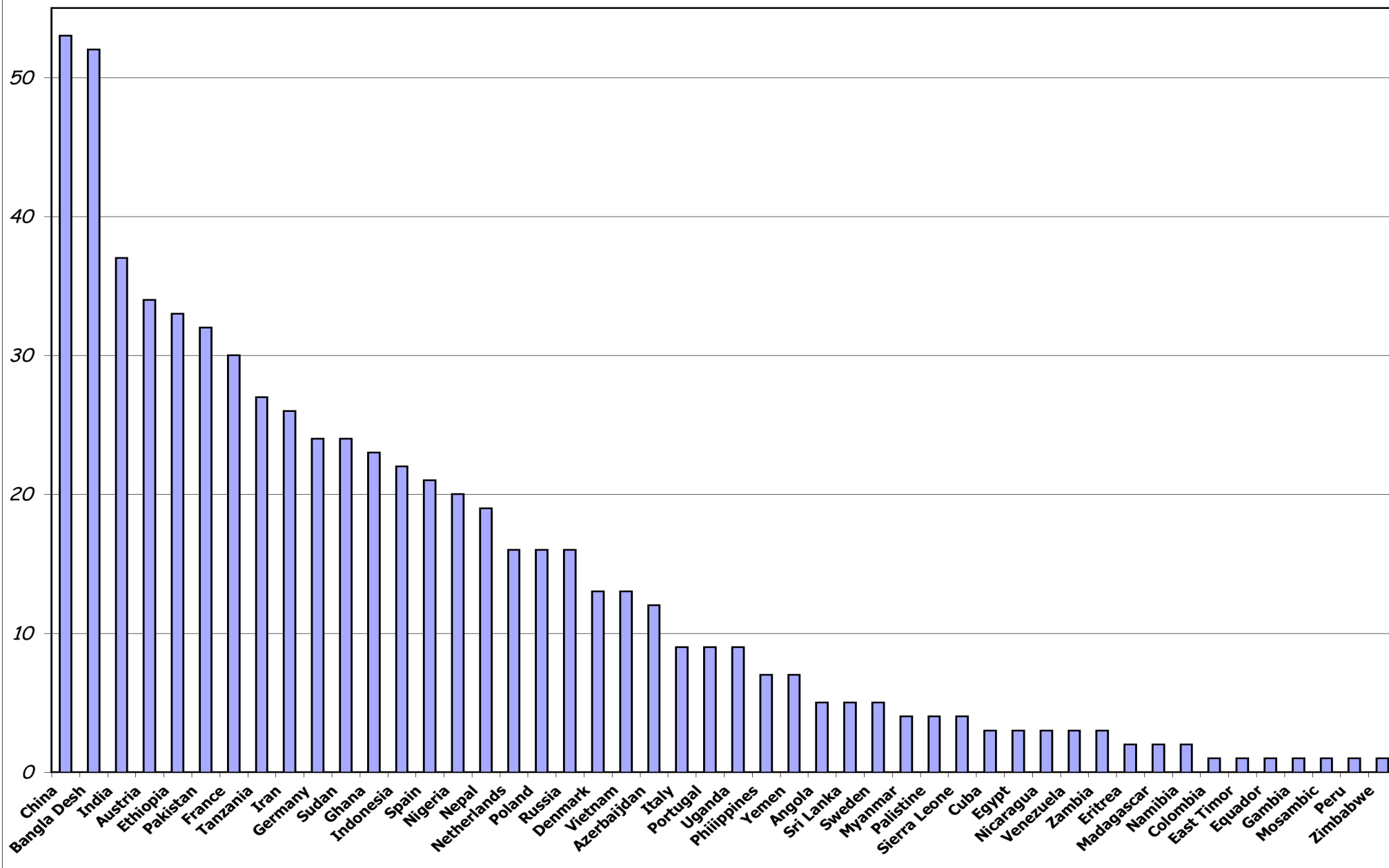
- *ROSE - The Rock-Seismic Program*
- *4D Seismic - Reservoir Simulation Program*
  - *Improved Oil Recovery Program*
  - *Seafloor Separation Program*
  - *Subsea Program*
  - *New Drilling Methods Program*
- *Smart Fields/Integrated Operations Program*
  - *Heavy Oil Recovery Program*

# *International Educational Collaboration*

- *Student exchange agreements with European universities*
- *Student exchange agreement with University of Texas, Texas A&M University, Colorado School of Mines*
- *Student exchange agreement with UNICAMP, Bahia and PUC, Brazil*
- *Student exchange agreement with University of New South Wales, Adelaide and Perth, Australia*
- *NORAD-financed petroleum education for students from Asia and Afrika*
- *Government-financed petroleum education for students from Eastern Europe and developing countries*
- *Educational collaboration with Pomor University, Russia  
150 students trained during 1996-2004*
- *Training ageement with NIOC, Iran for education and research.  
50 Iranians graduated with M.Sc. degrees at NTNU during 2000-2005*
- *Educational agreements with Angola, Azerbaijan, Bangladesh, Brazil, Mozambique, Russia and Venezuela*
- *Discussions of collaboration with Iraq, Libya, Nigeria, Saudi Arabia,*



*Non-Norwegian Students in the M.Sc. Programs in  
Petroleum Engineering/Geoscience at NTNU during 1993-2005/06*

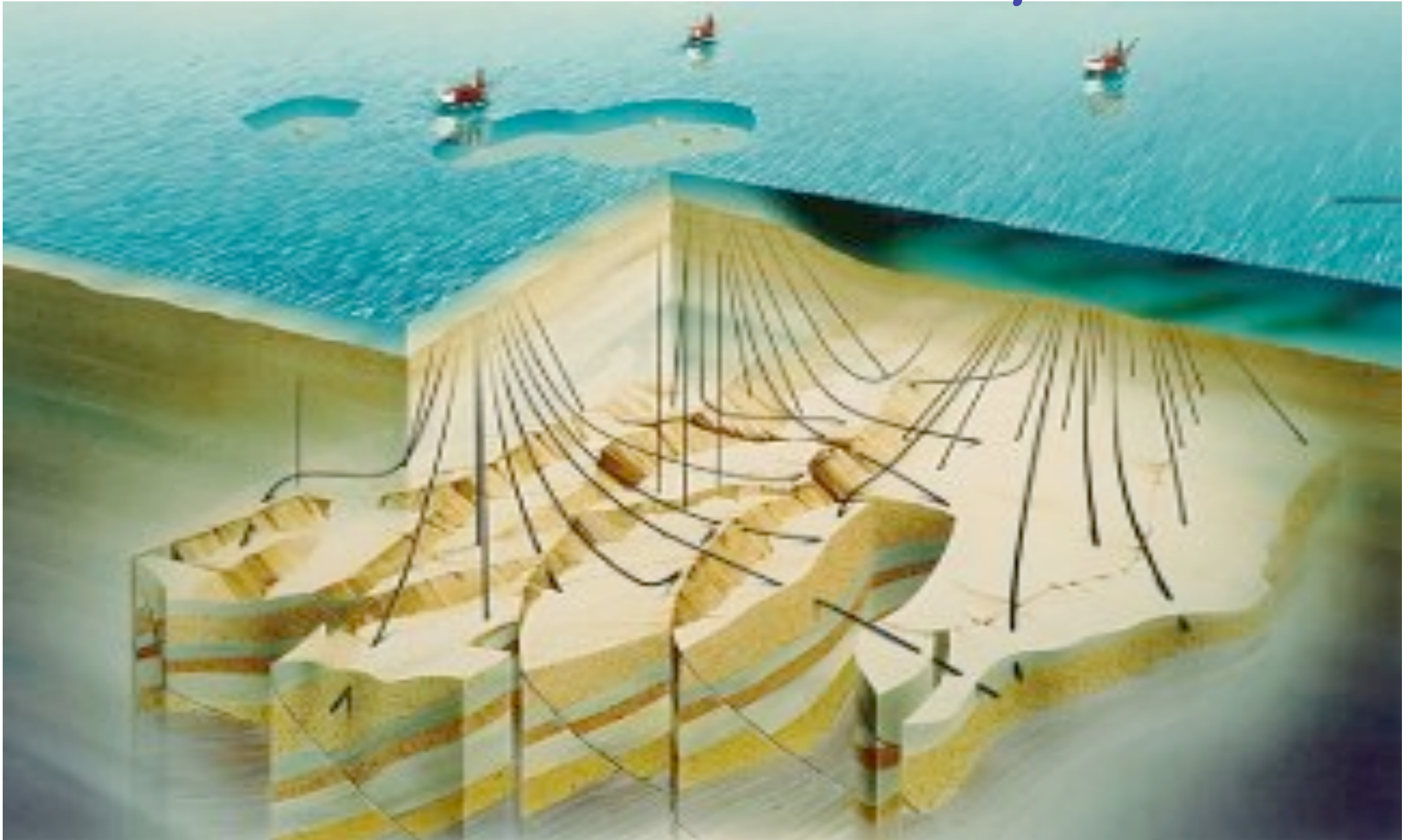


# *Research collaboration with industry*

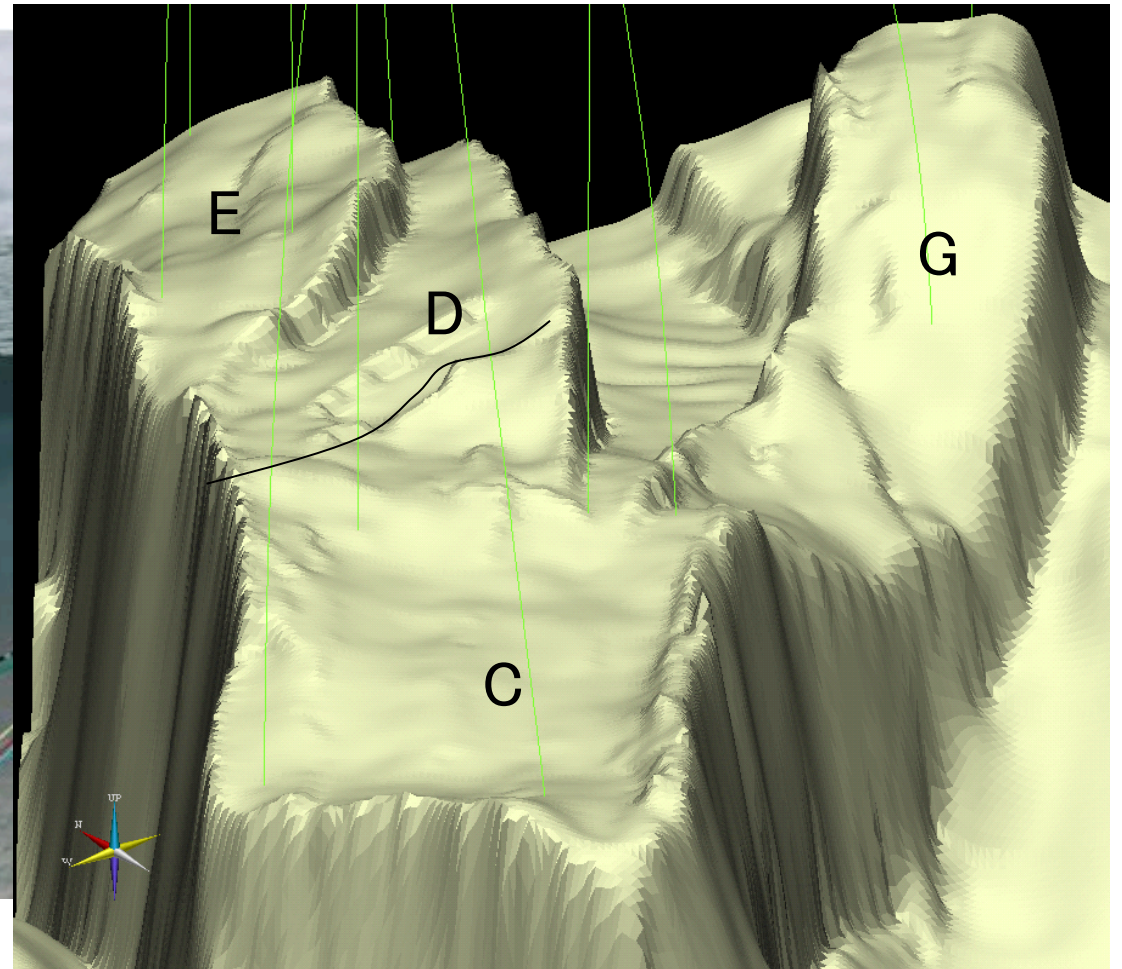
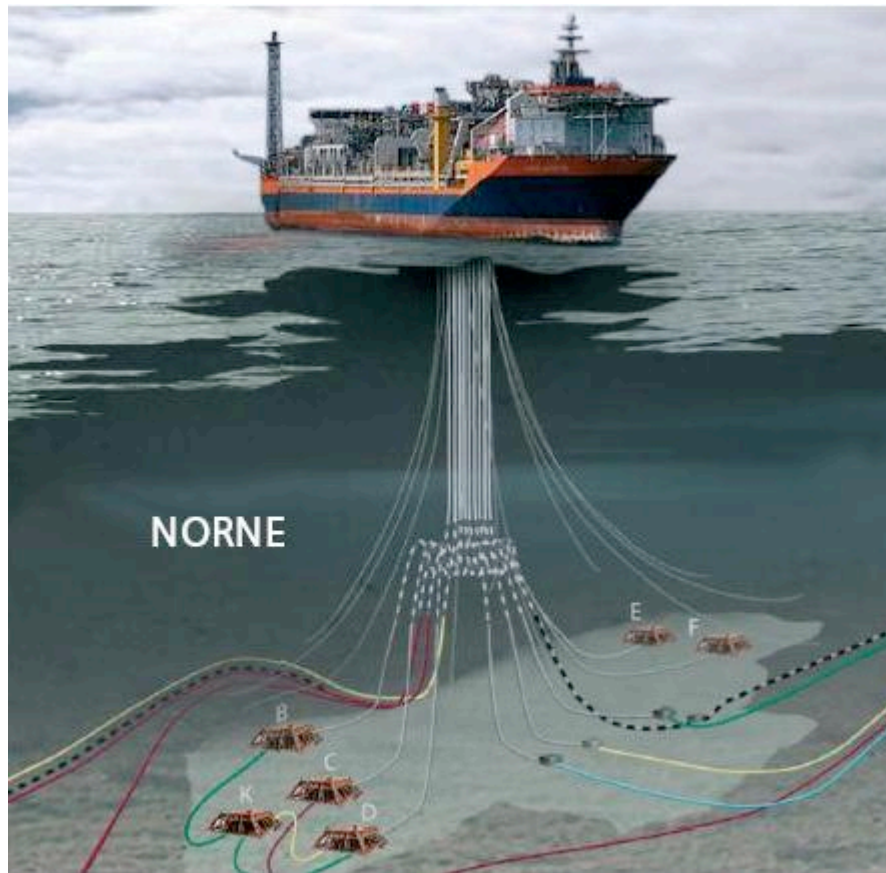
*Long-term collaboration agreements with:*

*StatoilHydro, Shell, TOTAL, Enterprise Oil  
(Shell), BP, ConocoPhillips, ENI, Gaz de  
France, DnV, IBM, Aker Kværner, FMC,  
Kongsberg*

# *Gullfaks Database at the Department*



# *NORNE Database at the Department*



# *Industry Supported Field Courses*

## *Geological Field Courses*

*Through a close cooperation with Statoil, Norsk Hydro, BP, and Shell, several field courses for M.Sc. students have been developed over the past few years. The courses take place at Svalbard, in England, in the Pyrenees and in Oman.*

**PetroX**



**Svalex**



**Pyrex**



**Omanex**





***Center for Research-Based Innovation***  
***for***  
***Integrated Operations***  
***at***  
***NTNU/SINTEF/IFE***

# Oil and gas production at present



# Oil and gas production of the future





# *Control Room for Integrated Operations at the department*





# Center for Integrated Operations



## Partners



## INTERNATIONAL RESEARCH PARTNERS

STANFORD UNIVERSITY

Carnegie Mellon



京都大学

Kyoto university

# RESEARCH CHALLENGES FOR INTEGRATED OPERATIONS

