Society of Petroleum Engineers (SPE)

AIME 150th Anniversary Meeting
03 October 2021
Tom Blasingame — 2021 SPE President
Where we came from in oil and gas ...
Looking (Way) Back — World Oil Resources (Circa 1920)

Map showing distribution and relative size of world's oil resources, prepared under direction of U.S. Geological Survey in 1920.

Our petroleum engineering roots stem from the need to define value and production capabilities of oil and gas wells.
Society of Petroleum Engineers — Historical Perspectives

SPE at a glance
Society of Petroleum Engineers — A Brief History

1871 — American Institute of Mining Engineers (AIME) formed
1919 — AIME combined with the American Institute of Metals to become the American Institute of Mining and Metallurgical Engineers
1922 — AIME Oil and Gas Committee → Petroleum Division of AIME
1922 — Petroleum Division of AIME ~ 900 members
1945 — Petroleum Division of AIME ~ 2,300 members
1950 — Petroleum Division of AIME ~ 3,700 members
1957 — Petroleum Division of AIME ~ 12,500 members
1957 — Society of Petroleum Engineers (SPE) of AIME is formed
1985 — SPE incorporated separately from AIME in 1985

*SPE values its engineering and geoscience heritage.*
1960 — 14,112 Professional members, 694 Student members
1970 — 16,781 Professional members, 901 Student members
1980 — 34,604 Professional members, 4,185 Student members
1990 — 49,768 Professional members, 1,818 Student members
2000 — 46,913 Professional members, 5,005 Student members*
2010 — 71,191 Professional members, 26,000 Student members
2015 — 99,175 Professional members, 68,950 Student members
2020 — 74,742 Professional members, 65,858 Student members

* Student membership became free in 2002 — in 2021, almost 50 percent of student members are in Asia Pacific + Africa.

Society of Petroleum Engineers — By the Numbers

SPE is (by far) the preeminent professional organization in oil and gas.
Society of Petroleum Engineers — Milestones

1871 — AIME forms in Pennsylvania USA (happy 150th birthday!)
1913 — AIME creates oil and gas committee
1949 — 1st issue of Journal of Petroleum Technology (JPT) published
1957 — SPE officially founded as constituent society of AIME
1969 — Offshore Technology Conference
1985 — SPE incorporates separately
1993 — Jacques Bosio is the first non-US president
1996 — DeAnn Craig is the first female president
2007 — SPE celebrates 50-year anniversary
2007 — Jaleel Al-Khalifa is the first president from the Middle East
2013 — Unconventional Resources Technology Conference
2013 — Egbert Imomoh is the first president from the Africa
2021 — SPE engages in "exploration of merger" with AAPG

SPE seeks to evolve its energy mission, while focusing on core resource.
Membership has grown well — but has fallen sharply due to economics.
**SPE Membership — Global Demographics (2020)**

- **Professional Members**
  - 74,742 members in 144 countries
  - 204 sections
  - 6% in Africa
  - 13% in Asia Pacific
  - 10% in Europe
  - 5% in Latin America and Caribbean
  - 22% in Middle East and North Africa
  - 4% in North America
  - 4% in Russia and Caspian

- **Student Members**
  - 65,858 members in 125 countries
  - 411 chapters
  - 11% in Africa
  - 11% in Asia Pacific
  - 12% in Europe
  - 11% in Latin America and Caribbean
  - 6% in Middle East and North Africa
  - 13% in North America
  - 35% in Russia and Caspian

**Professional membership led by NA + ME (but have a good global mix).**
Approximately 275 staff in 7 offices

State of the oil and gas industry
Realities of Petroleum Engineering

**Technical Knowledge — Skills, Needs, Standards**

(... Has not changed significantly since 1940's)

**Skills that Define a Petroleum Engineer:**
- General Knowledge/Skills (Math, Engineering, etc.)
- Oil and Gas Drilling Systems
- Production Engineering and Operations
- Petrophysics, Formation Evaluation, and Geology
- Reservoir and Well Performance, Reservoir Fluids
- Petroleum Project Evaluation (Reserves/Economics)
- Integrated/Multidisciplinary Teams

**Emerging Needs/Skills that Must be Emphasized:**
- Unconventional Reservoir Technologies
- Statistics/Data Manipulation (i.e., "Data Analytics")
- HSE+S (+ the so-called "Sustainability" aspects)
- ESG = Environmental, social & corporate governance
- Integration: DRLG, CMPL, RESR, PROD, FACL, ...

**Commodity Businesses are Cyclical**

(... Oil Price Appears to be a Leading Indicator)

Industry is cyclical, but we need best-in-class Petroleum Engineers.
BS Degrees in Petroleum Engineering — Historical Trends

We tend to over-respond to industry demand.

Post-WWII growth.

US tight gas development and response to OPEC.

US shale development and global growth.

[14]
Energy "Additions"
We are Energy Transition™
(... Our world has a gigantic appetite for energy ...)

Global energy demand is increasing (> 2%/year).

We are Energy Transition™
(... Oil and gas are the keys to the future energy mix ...)

Global Energy Production History (Quadrillion BTU/Yr)
(Data from Etemad and Luciani, US DOE-EIA)

Constant rate exponential increase in Total Energy Production since 1965 ...

Note: Trends are "sketched" overlays of actual trends.
Energy Transition (or Energy "Addition") — 2/2

Global Population (1970 = 1)

Global GDP (Chained to 2017) (1970 = 1)

Total Energy Production (1970 = 1)

Global Total Energy Production/Global Population (1970 = 1)

(Global Population x Global GDP)/Global Total Energy Production (1970 = 1)

Global Total Energy Production/Global GDP (1970 = 1)

~x2 (1970-2020)

~x4.5 (1970-2020)

~x3 (1970-2020)

~1.15 (1975-2000)

~1.41 (2010-2019)
Thinking about the future ...
As of 29 Sep 2021, both SPE and AAPG leadership have approved taking the merger decision to their memberships for a vote during Q1/Q2 of 2022.
Merger with AAPG — Why it makes Sense

● Member and industry needs will evolve considerably over the next decade from challenges and opportunities presented by the Energy Transition.
● Prepare our members for new roles and career opportunities better addressed by a cross-disciplinary organization and to balance this reality with a continued, strong focus on SPE's core disciplines.
● Supporters and stakeholders (companies) can no longer support 4+ (major) separate professional societies with volunteers or financial investments at the levels of the past 20 years.
● Create the global professional society for petro-technical professionals that addresses the challenges of the energy transition and attracts the support of critical company stakeholders.

This is a proposed merger of intellectual equals.
The savings and potential revenue models are being updated.
Engaging the public ...
How we face the public is changing

Past: Responsibility programs driven by external stakeholders
Future: Sustainability aligned businesses driven by the industry for the industry and the planet

- Engineering Solutions — Sustainability Workshop
- Sustainability standing committee formed
- JPT President’s editorial
- Webinar series
- Board approves sustainability definition
- Proposal for sustainability training
- Sustainability PetroTalks at HSSE-SR conference
- Sustainability speaker roster
- New subcommittees on “Metrics that Matter” and “Citizen Engineer”
- Sustainability award
- Proposal—Gaia Summit
- Measuring What Matters
- Climate Strategy Program
- 3 DLs
- MDU IOGP & IPIECA
- Webinar Program
- 20HSE & 20ATCE
- 3 Climate & ET Workshops
- Technical Sections
- GCS Energy Dot
- Sustainability Award
- DLs
- Gaia Symposia Oman, Canada
- Gaia Student Summit
- Other events

2010–2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022

● First Sustainability Panel at ATCE
● Task force on sustainability formed
● 2-day training program on Sustainability Imperative
● Sustainable Development Technical Section formed
● 3 workshops on sustainability
● Sustainability training
● Sustainable Development Conference on climate change
● Climate change strategy approved
● 19ATCE
● Bahrain Energy Summit
● GCS Energy Dot
● Gaia Summit
● External Engagement
● Sustainability Award
● DLs
● Gaia Launch & Deployment
● ~40 Gaia Talks
● 3 Climate & ET Workshops
● 21ATCE
● JPT Decarbonisation Edition
● Sustainability Award
● Climate DL

Past: Responsibility programs driven by external stakeholders
Future: Sustainability aligned businesses driven by the industry for the industry and the planet

(https://www.un.org/sustainabledevelopment/)

We must engage the public as a partner, not a vendor.
Last words ...
What does "Energy Transition" mean for us?

Will Renewables Mimic Nuclear or Hydroelectric

Industry Considerations — Reality Check

What Has to Change in Our Industry?
- Energy Transition is here to stay.
- We must engage the public (to build trust).
- We must compete for relevance.
- "Rebranding"? ... but we are "GeoEnergy!"
- Global energy demand = +2.3 %/Yr (last 20 Yr).

What Should Stay the Same in Our Industry?
- Our emphasis on cutting-edge technology.
- Our emphasis on best-in-class talent.
- Our very high "say/do" ratio (over-deliver!).
- Our ability to adapt.
- We must produce 97 million STB/D, 0.4 tcf/D (day job).

Energy Mix
- Oil and gas will continue to dominate the energy mix.
- Renewables growing, but infrastructure is main challenge.
- Hydrogen will eventually dominate (decades from now).

What we now call "Energy Transition" will take decades or generations.
Very last words ...
We are facing an energy future that will be facilitated by what challenges, opportunities, and responsibilities our societies decide to embrace and engage. The existential threats to life on this planet are population, pollution, and frankly, a disregard for the fragility of life caused by the arrogance of mankind — but the solutions are water, food, technology, manufacturing, services, and education — and the key to all of these solutions is energy.

On this occasion of the 150th anniversary of the AIME, I ask that we commit our 4 societies to a sustainable energy future that is carbon neutral and scalable for a population that is growing at ≈1 percent/year, while energy demand is growing at > 2 percent/year. We have the people, the technology, the motivation, and frankly, we have the duty to do so. I ask much, but 150 years ago do you believe our founders had any less of an ambition, or any less of a commitment to serve society? We have a call to duty, and to act; let's get to it.

A call to act.
Society of Petroleum Engineers (SPE)

End of Presentation

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