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International Petroleum
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20-22
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Qatar National
Convention Centre
Doha, Qatar

Presentation No. 2253

Microbially Enhanced Oil Recovery Field Pilot at Plawowice, Poland
*Validation of MEOR for Smaller Scale Projects through Proper
Design, Development, Implementation and Monitoring*

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National Research Institute**



P. Launt, S. Nelson

RAM Biochemicals, Inc.





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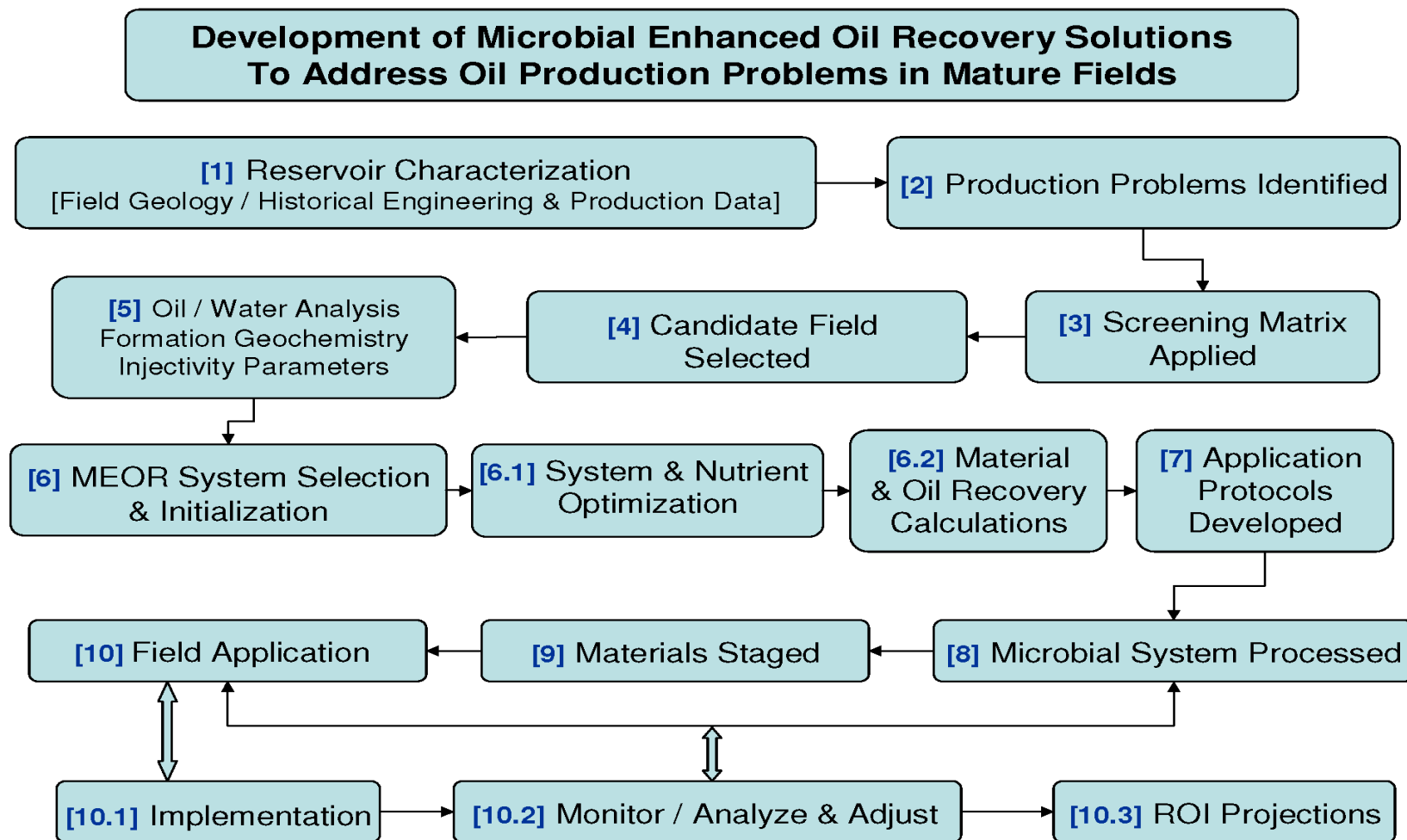
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Outline:

- MEOR project design & development
- MEOR project implementation
- Project evaluation
- Project production results
- Project economics
- Conclusions

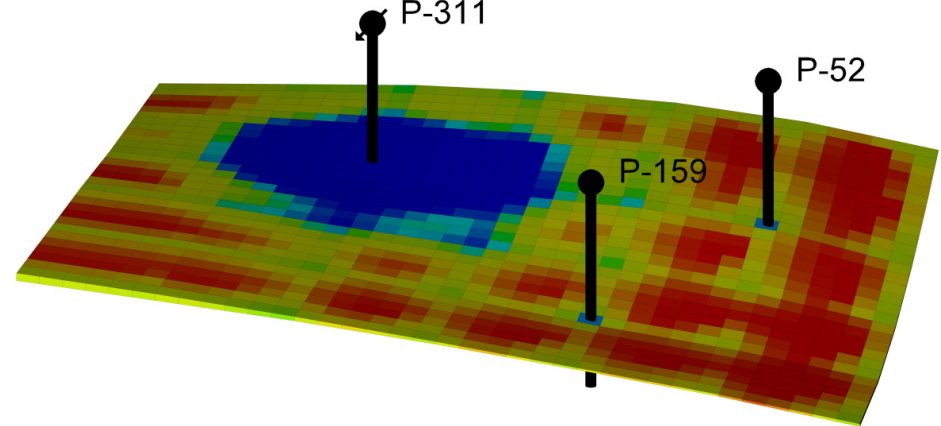
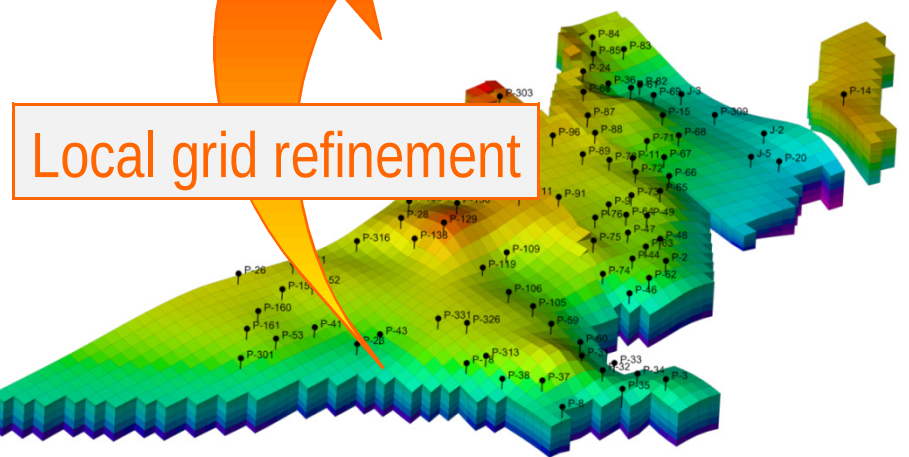
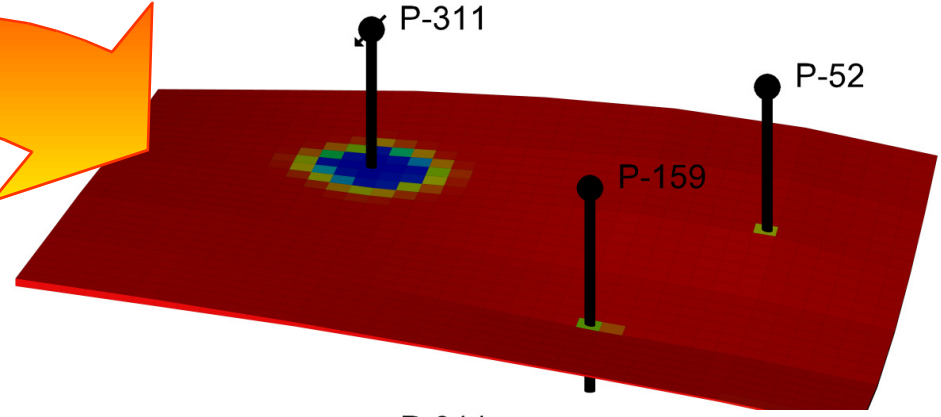
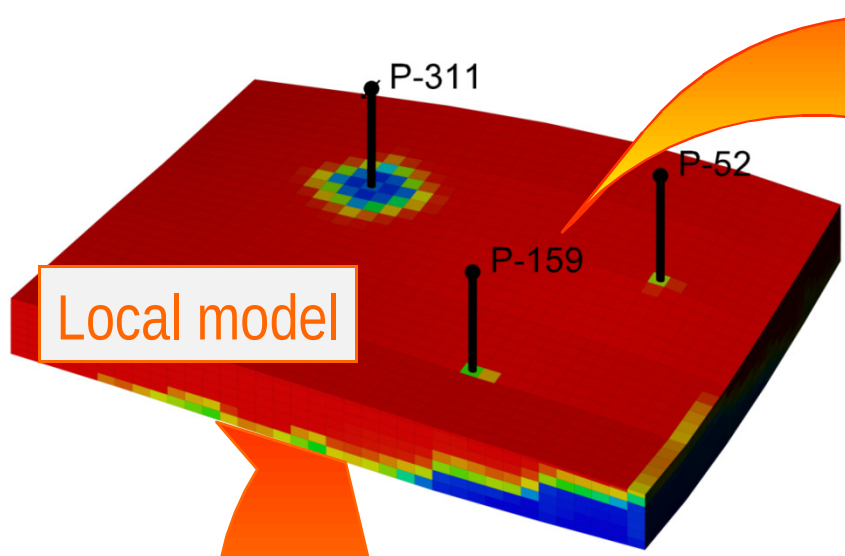
MEOR PROJECT DESIGN & DEVELOPMENT



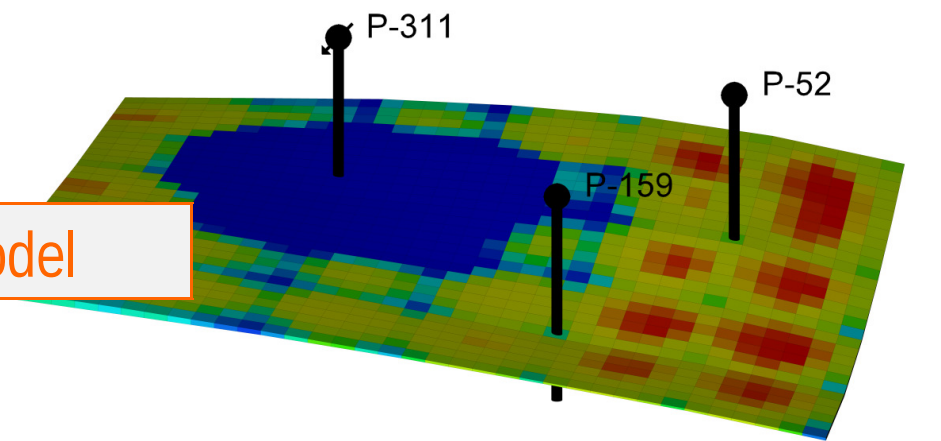
Flow diagram of how the Plawowice project was designed, developed and implemented

Plawowice deposit – simulation model

Reservoir simulation

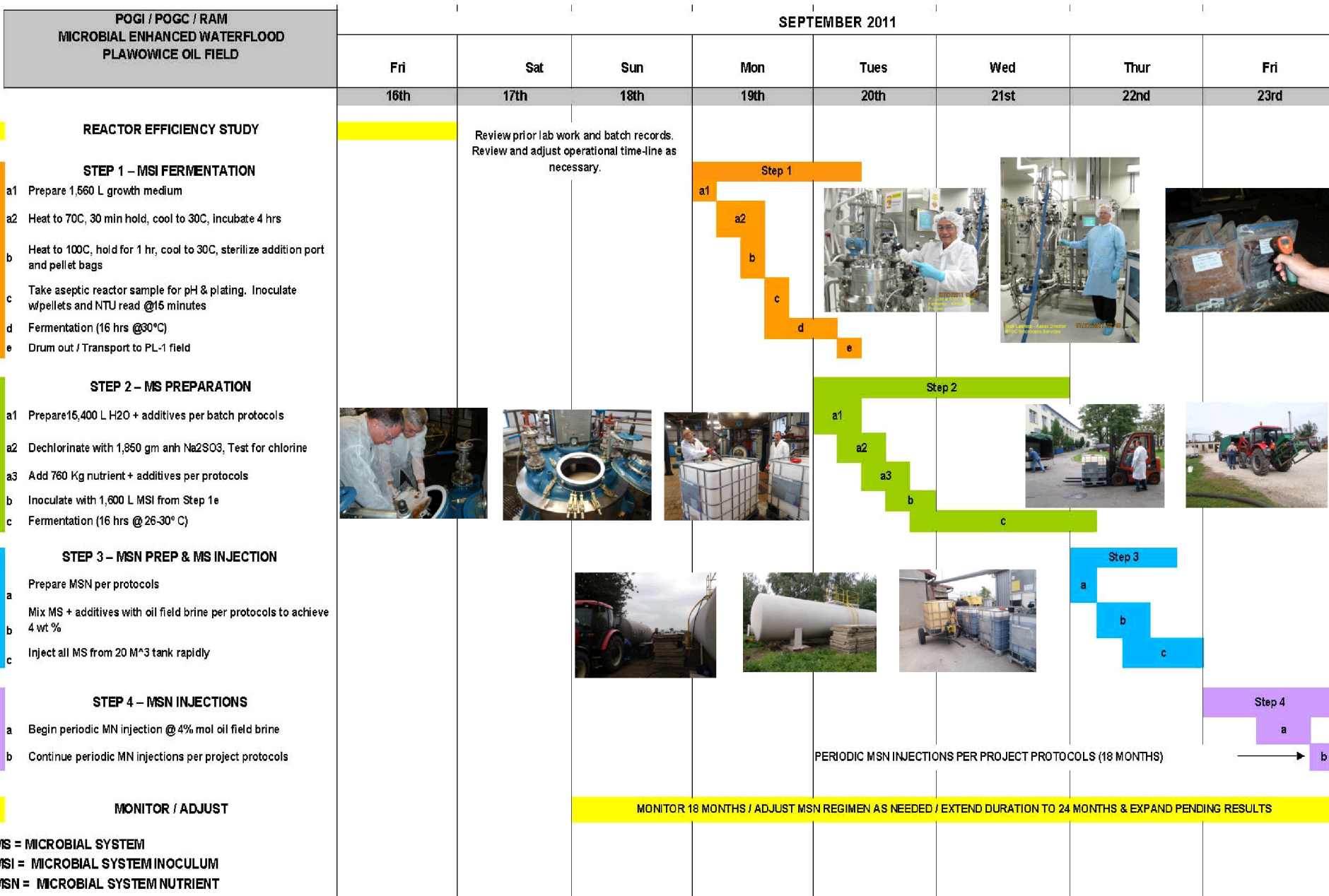


History matched global dual porosity model



MEOR PROJECT IMPLEMENTATION

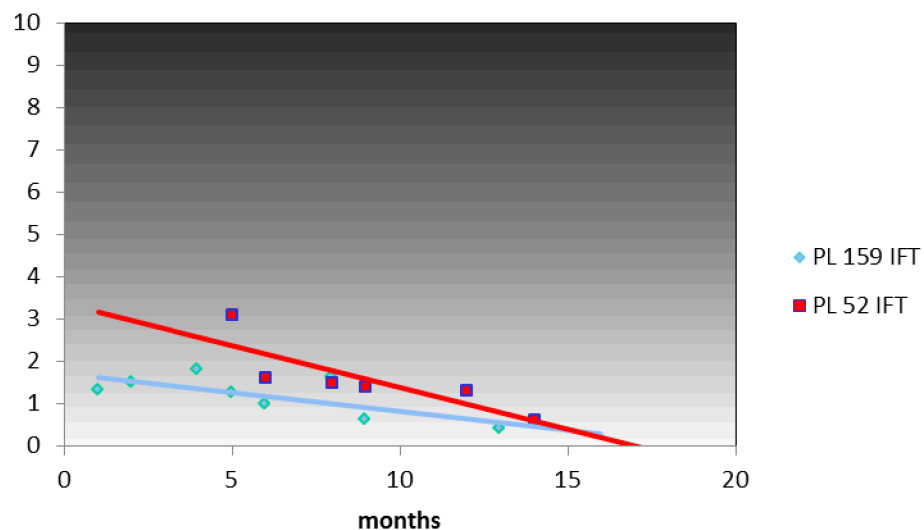
(Plawowice operational time-line / project implementation – initial 18 month project duration)



MEOR PROJECT EVALUATION

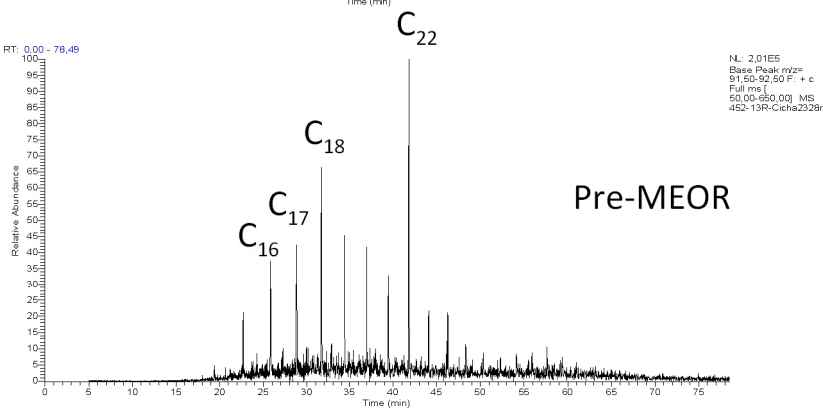
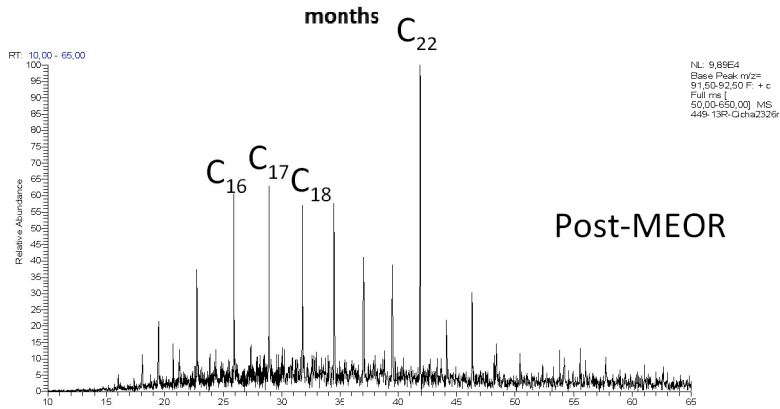
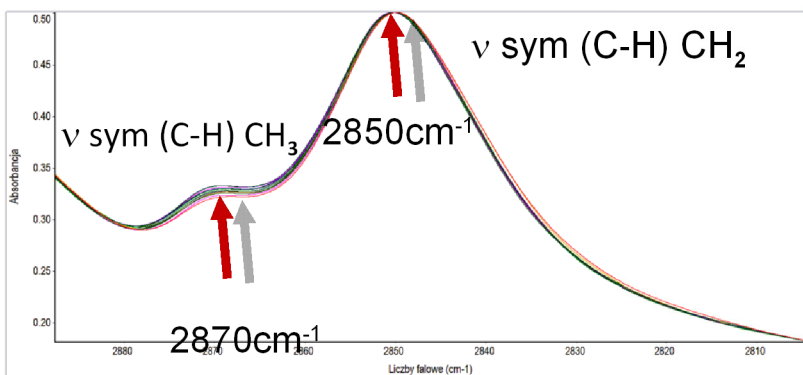
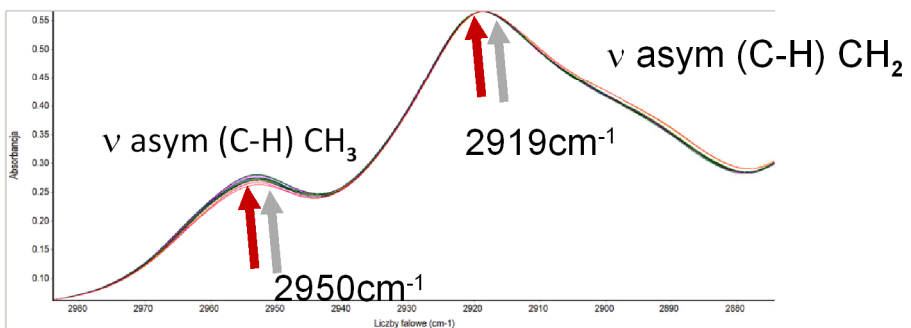
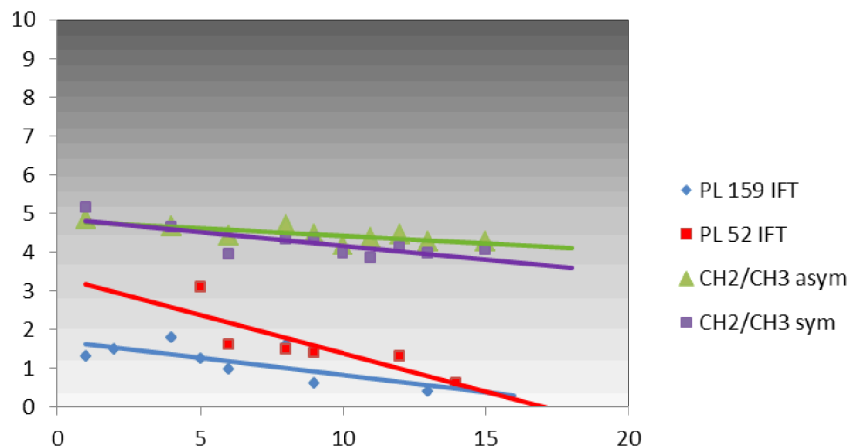
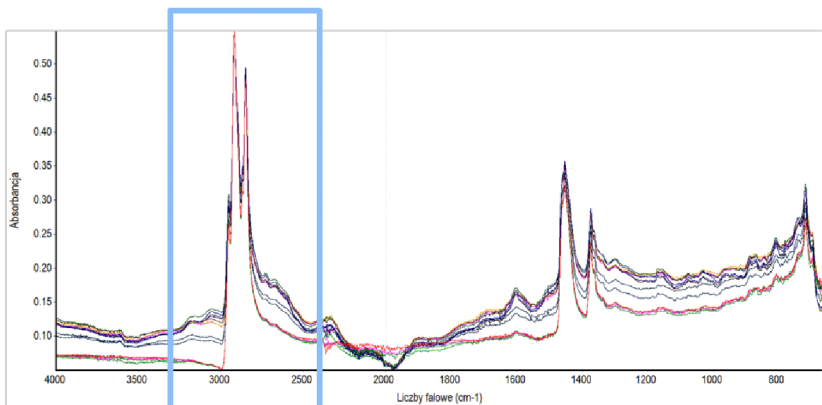
MEOR's long-term distinctive response is to increase net oil rate and simultaneously to reduce Water Cut. This typical duality in MEOR response is explained by the change in apparent oil and water mobilities in the colonized portion of the reservoir, the bioreactor.

well	Viscosity Pre-MEOR	Viscosity Post-MEOR	Density Pre-MEOR °API	Density Post-MEOR °API	Temperature °C / F
PL - 52	14.74	9.52	32.5	36.0	20/68
PL - 159	14.96	9.79	32.5	35.9	20/68



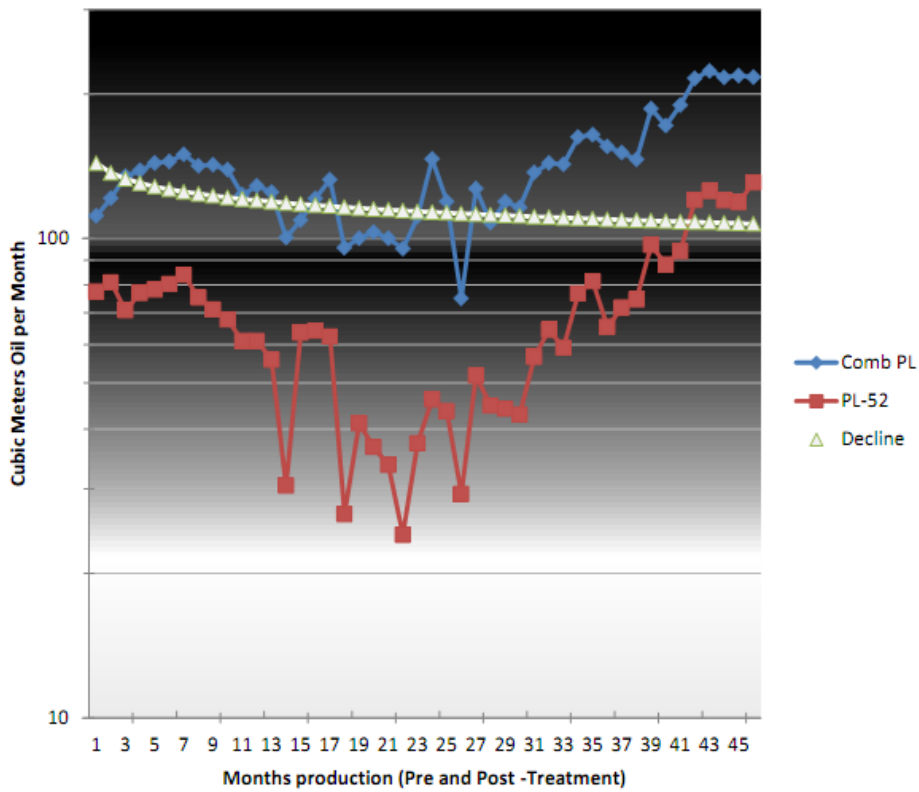
Paper 2253 • Microbially Enhanced Oil Recovery Field Pilot at Plawowice, Poland -
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MEOR PROJECT EVALUATION

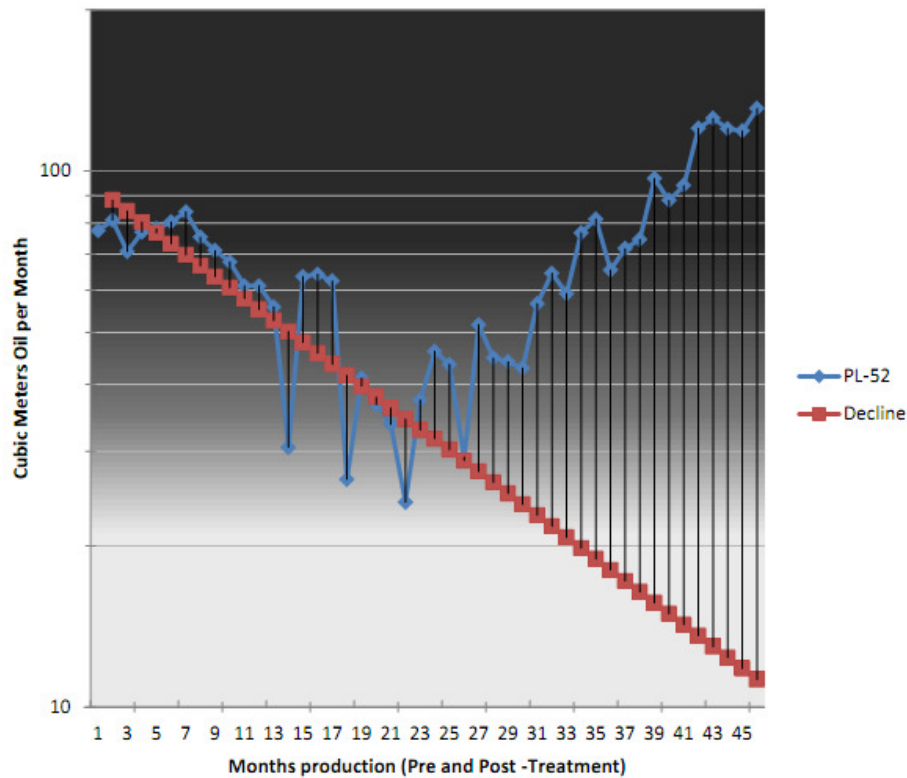


MEOR PROJECT PRODUCTION RESULTS

Combined PL- Production



PL-52 Production



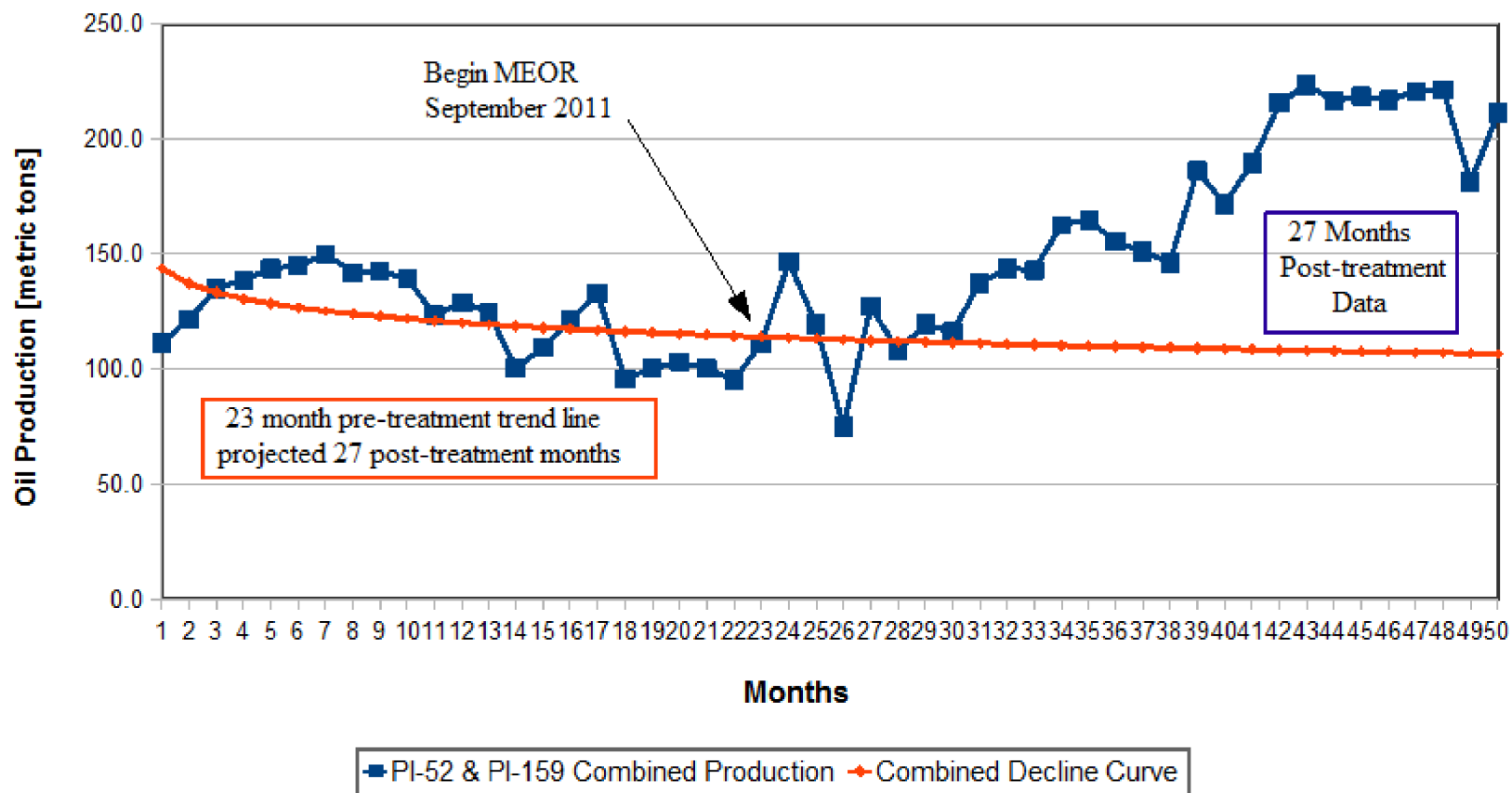
Plawowice - 23 months of pre-treatment and post-treatment data



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Plawowice MEOR Project

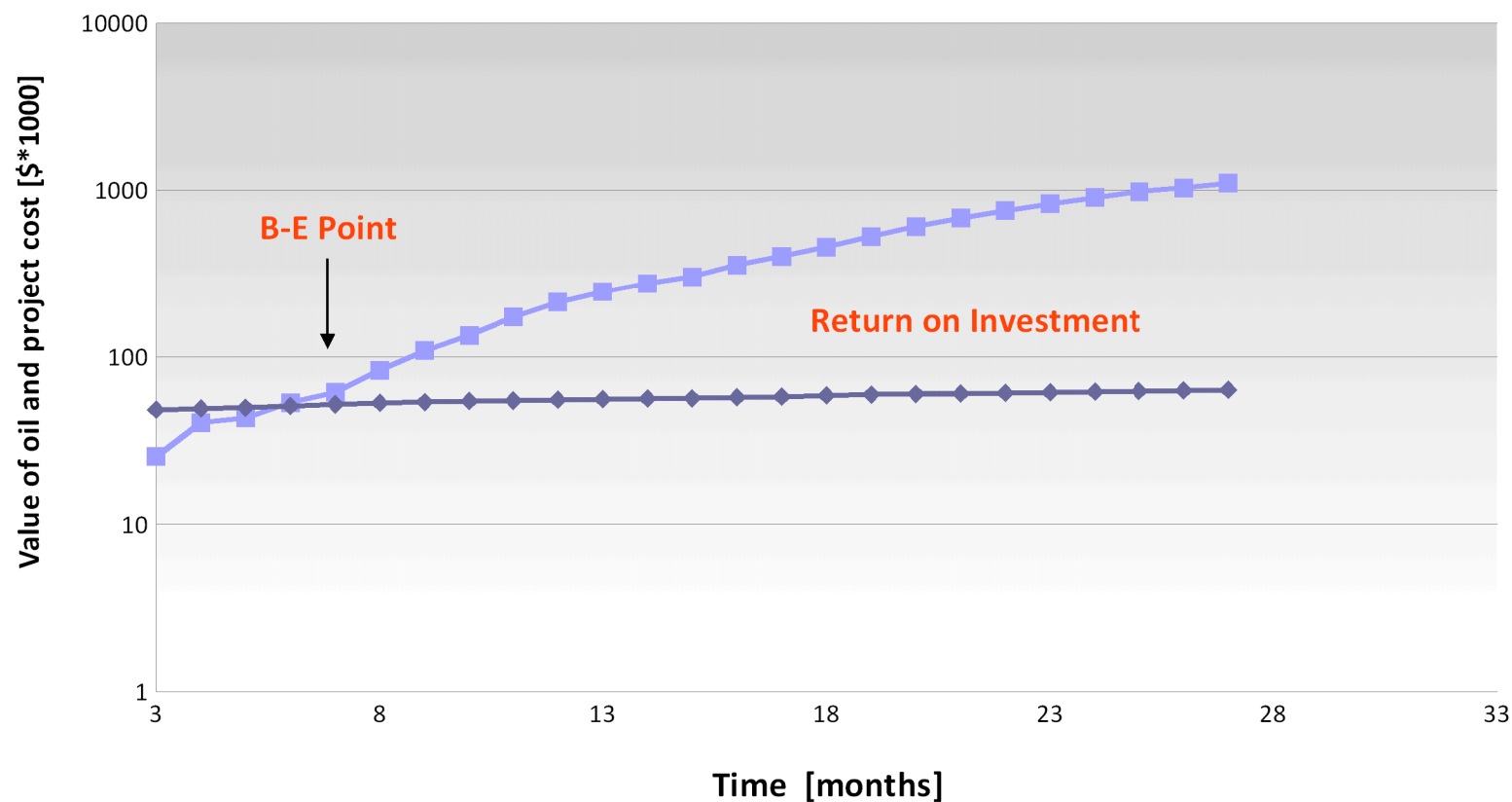
23 months pre-treatment & 27 months post-treatment data with trend line



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PROJECT ECONOMICS

Cumulative Value of PI-52 & PI-159 Incremental Oil vs. Project Cost
at \$650 USD / Metric Ton



Acknowledgements

The POGC Directorate for funding this important project and for agreeing to the publication of performance data.

To the Plawowice Oil Field management for their technical cooperation in planning, implementing and monitoring the project.

Our great thanks to Scott Bailey, Ph.D., previously Micro-Bac International, Inc. (USA) for his valuable contribution at the initial state of project

RAM Biochemicals is grateful to North Carolina State University, Microbiology Department and the NCSU Bioprocessing Center [BTEC]

THANK YOU

Questions?