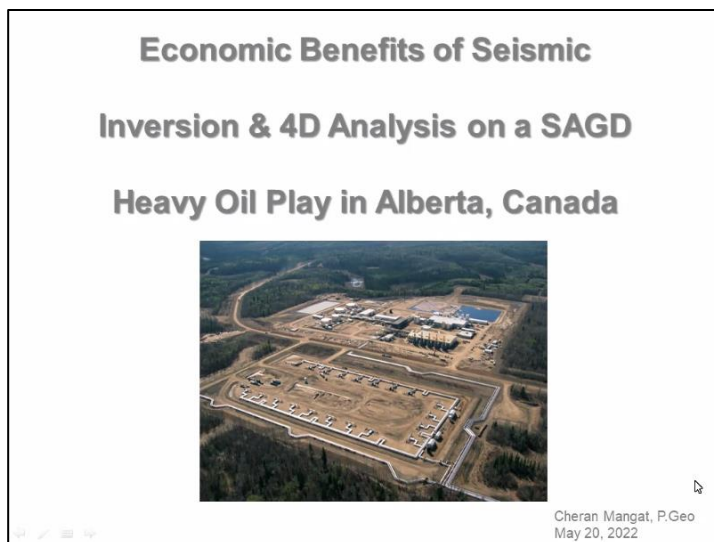


SPG organized a technical webinar on 20th May 2022 at Dehradun

A technical webinar was organized by SPG, India on "*Economic Benefits of Seismic Inversion and 4D Analysis on a SAGD Heavy Oil Play in Alberta, Canada*" on 20th May 2022 by Ms. Cheran Mangat, P. Geo., Director at Axial Exploration Ltd, Calgary, Canada.

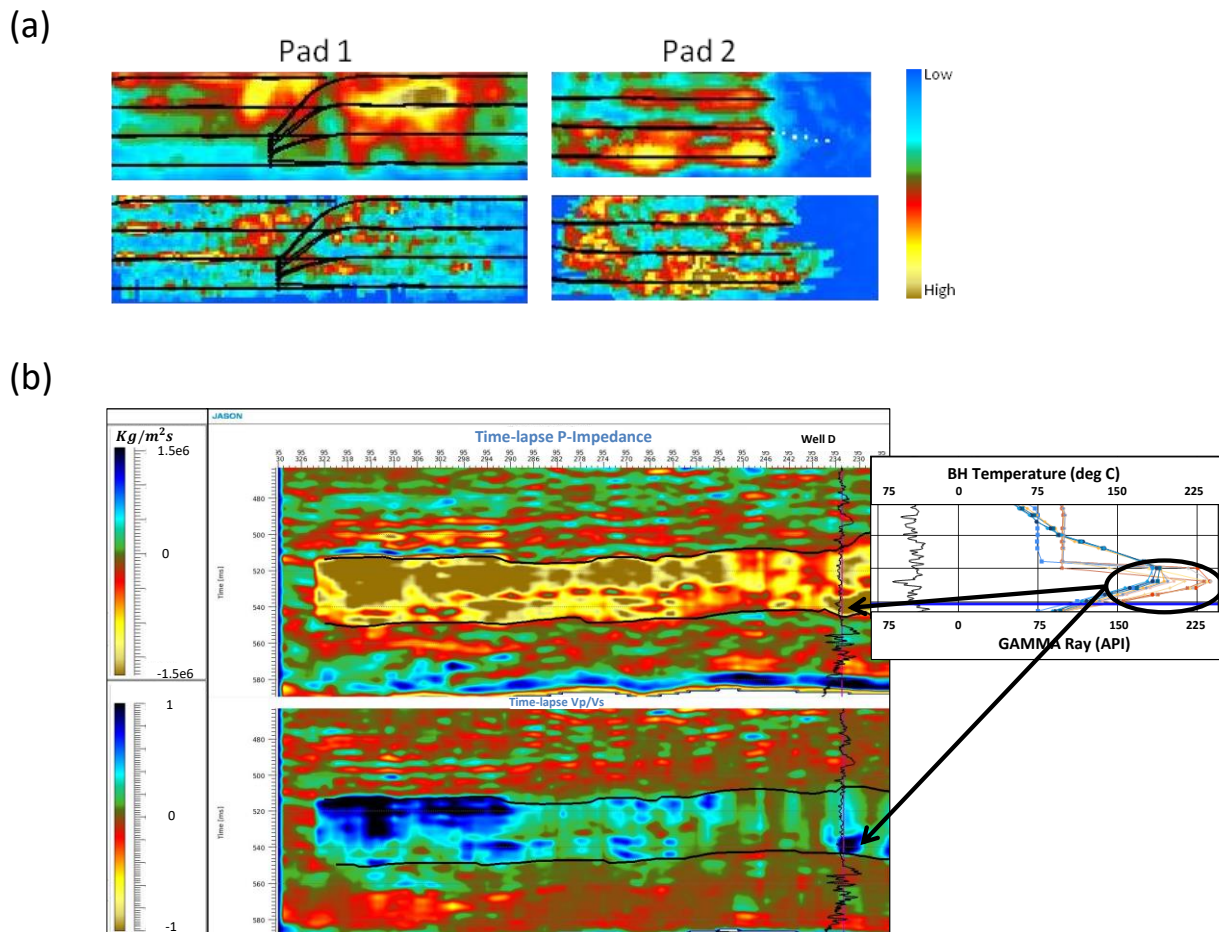



The technical webinar highlighted through usefulness of time-lapse (4D) seismic inversion combined with rock physics modelling to understand and interpret the changes in the elastic properties of the reservoir that result from changes in pressure, temperature, and fluids during enhanced oil-recovery methods such as steam-assisted gravity drainage (SAGD) operation. Ms. Mangat revealed that seismic data contains only part of the information necessary to characterize the reservoir in general, lacking low-frequency component which are essential to investigate shallow-depth reservoirs, as much of the information will have to come from the time-lapse low-frequency response of the subsurface. She demonstrated that rock physics models can be used to update the low-frequency component at well control and merged with the time-lapse inversion away from the wells to delineate the development, constitution, and extent of the steam chambers, which can usually reach 40-50 m in thickness. She also discussed a case study illustrating the new workflow developed to update the time-lapse low frequency model in a data-driven manner in time-lapse inversion to a heavy oil reservoir using the SAGD method for production. This approach was valuable in mapping the changes in the reservoir resulting from steam injection and oil production, and in turn, facilitating optimal placement of future well pads, resulting in increasing the overall oil production 5-fold within 3 years.

The webinar session was attended by the members of SPG, India from all over the country and other geoscientists from KDMIPE, GEOPIC, Frontier Basins as well as professors and students from different institutes. The lecture was well appreciated by all the participants and praised by one and all for its contents and thoughtful discussion provided by the presenter. During the webinar session participants actively participated

on discussion and asked various question related to the topic. Mr. Satinder Chopra, Chief Editor, GEOHORIZONS, was also present in the webinar and he interacted with Ms. Cheran Mangat and discussed about the topic.

Earlier, Shri Onkar Singh, Secretary SPG-India gave the welcome speech. The vote of thanks was given by Shri Subash Kumar Sharma, Treasurer, SPG India. The entire webinar session was coordinated by Shri Shashwat Shubhra, Executive Member, SPG, India.



Comparison between inversion results and two other independent sources of information: (a) Comparison with time shift map on two well pads. The top images in (a) are time shift maps from a horizon below the reservoir while the bottom ones are mean time-lapse P-Impedance within the reservoir. (b) Comparison of time-lapse P impedance (top) and time-lapse V_p/V_s (bottom) with temperature log at control Well D close to a steam chamber (As the elastic parameter changes in the reservoir are dominated by temperature effects, there should be a good correlation between the inversion results and the temperature measurements). (After Mesdag et al., 2015) 

Mesdag, P. R., M. R. Saberi and C. Mangat, 2015, Updating the low-frequency model in time-lapse seismic inversion – A case study from a heavy-oil steam-injection project, *The Leading Edge*, **34**(12), 1456-1461. <https://doi.org/10.1190/tle34121456.1>