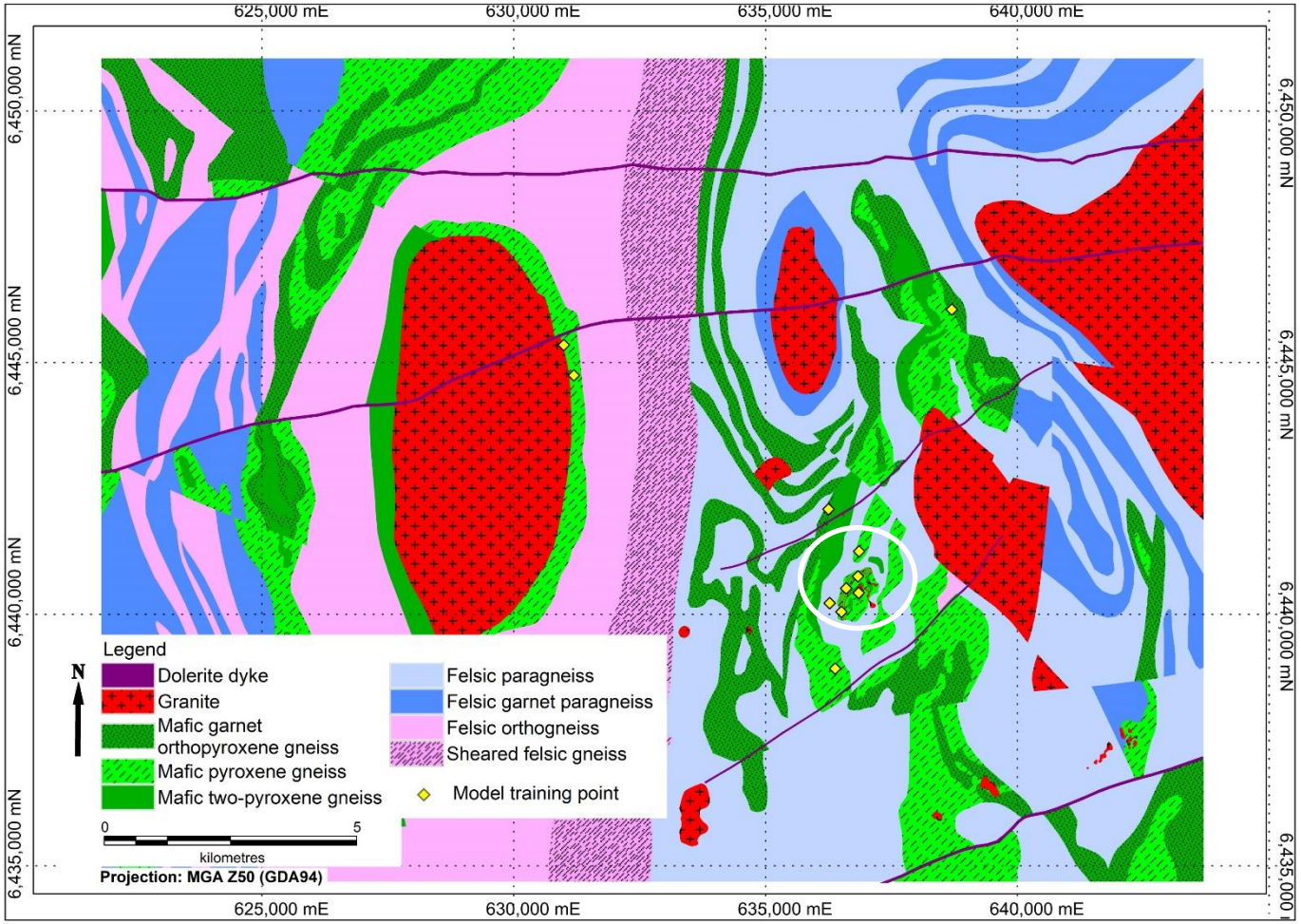
Downhole Logging in 3D Geology and Mineral Potential Modelling

Kenex
Creating opportunities in the spatial world

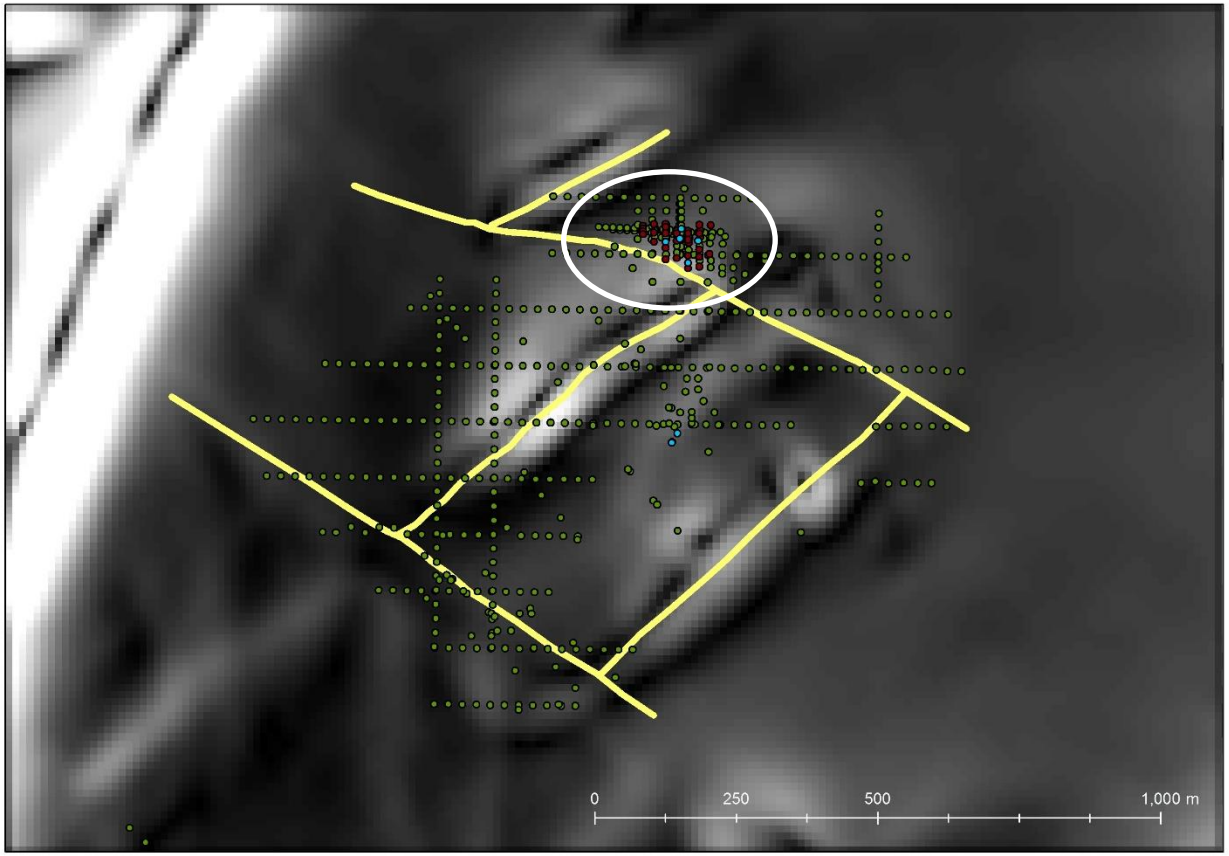
Simon Nielsen
Duncan Franey

Tampia Hill, geophysical mapping



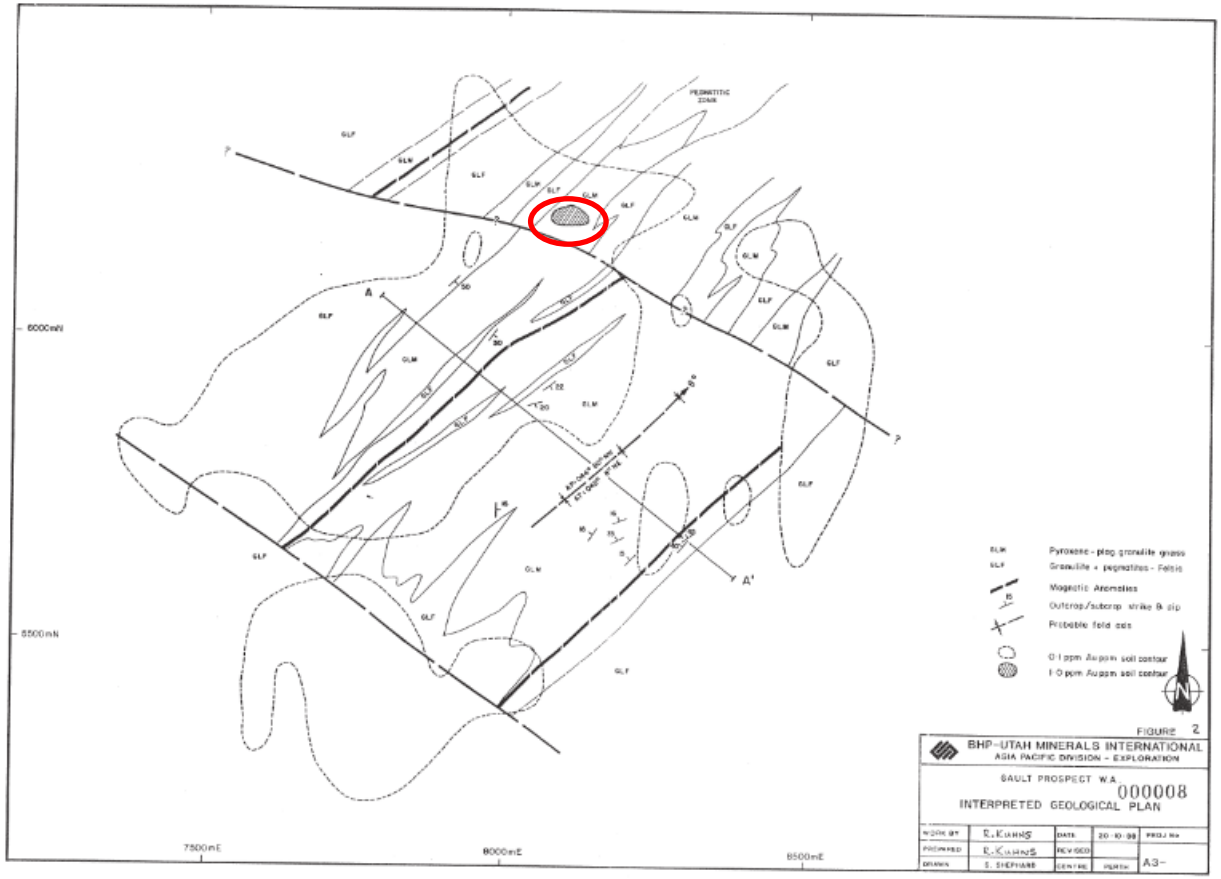
Kenex
Creating opportunities in the spatial world

Historical drilling



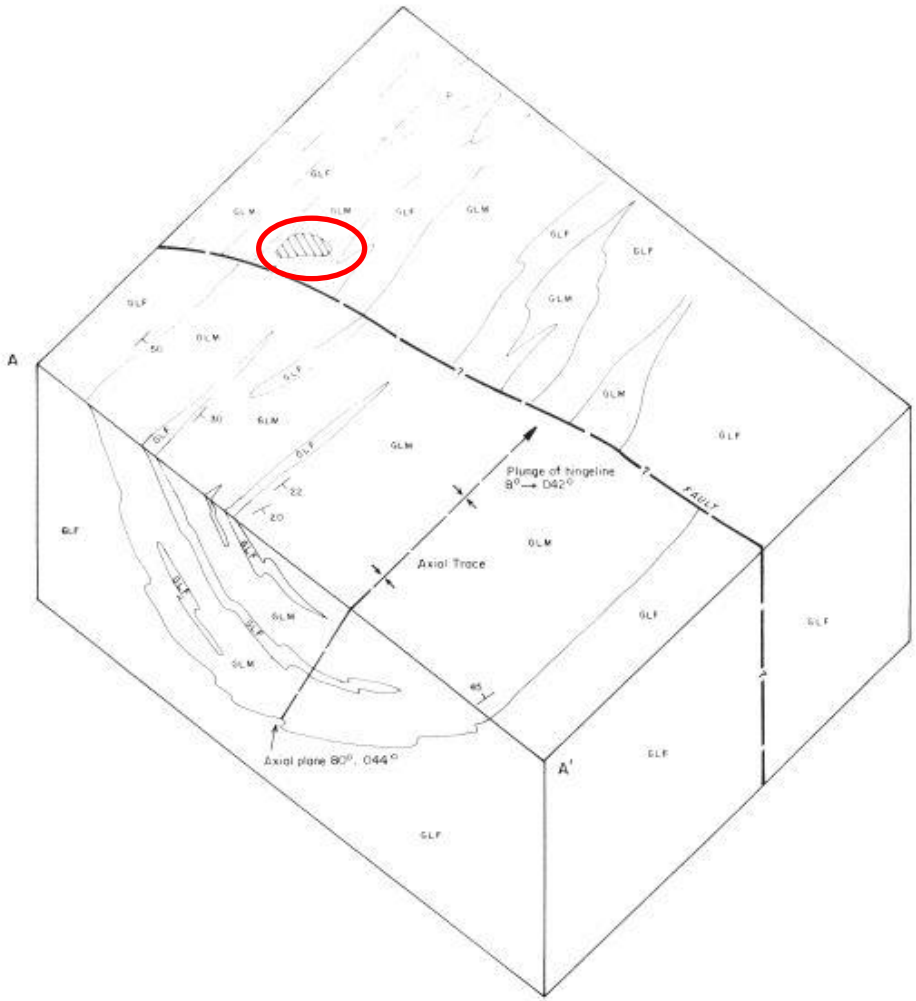
Kenex
Creating opportunities in the spatial world

Previous work



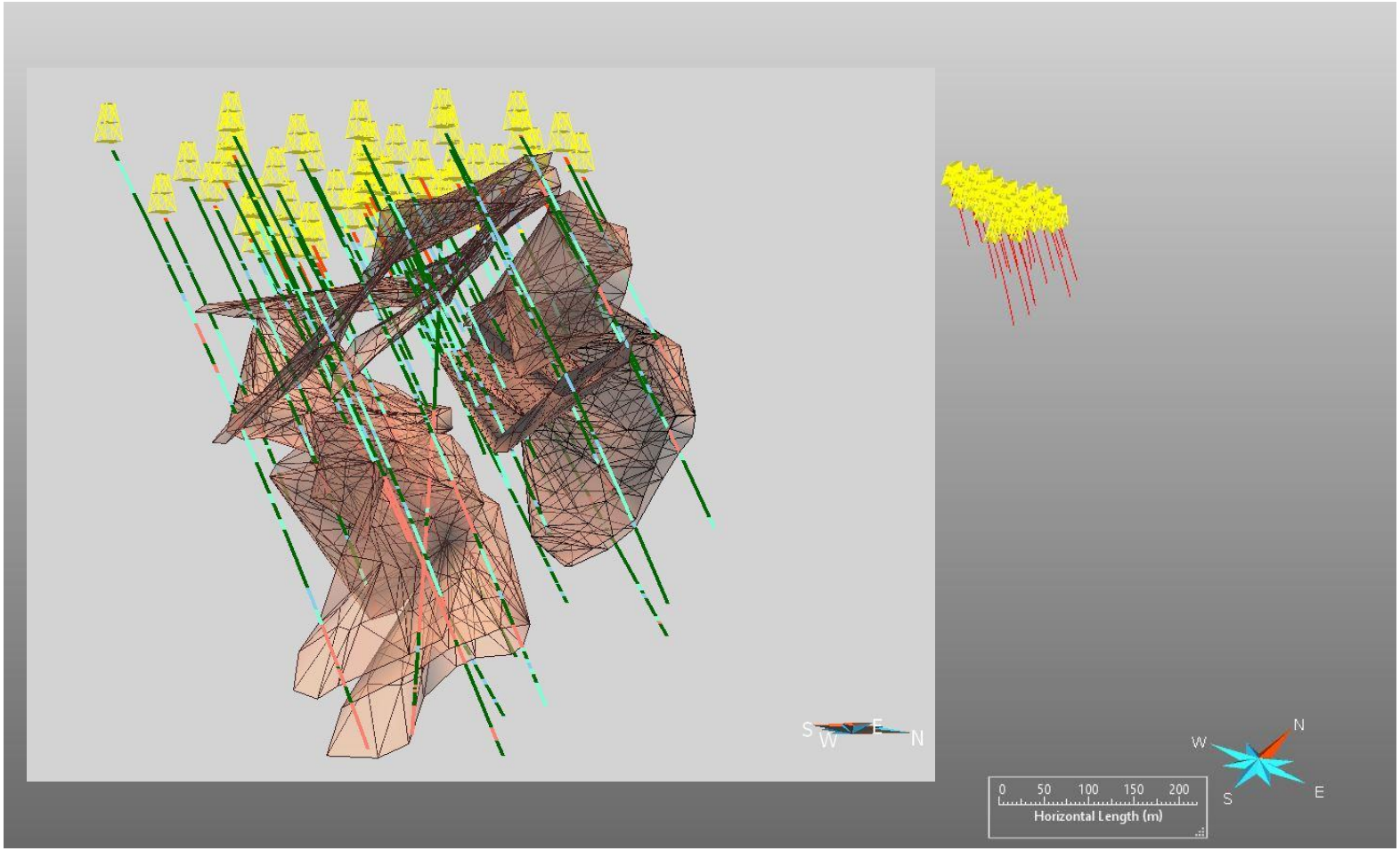
Kenex
Creating opportunities in the spatial world

Structural model



Kenex
Creating opportunities in the spatial world

Tampia RC drilling 2015

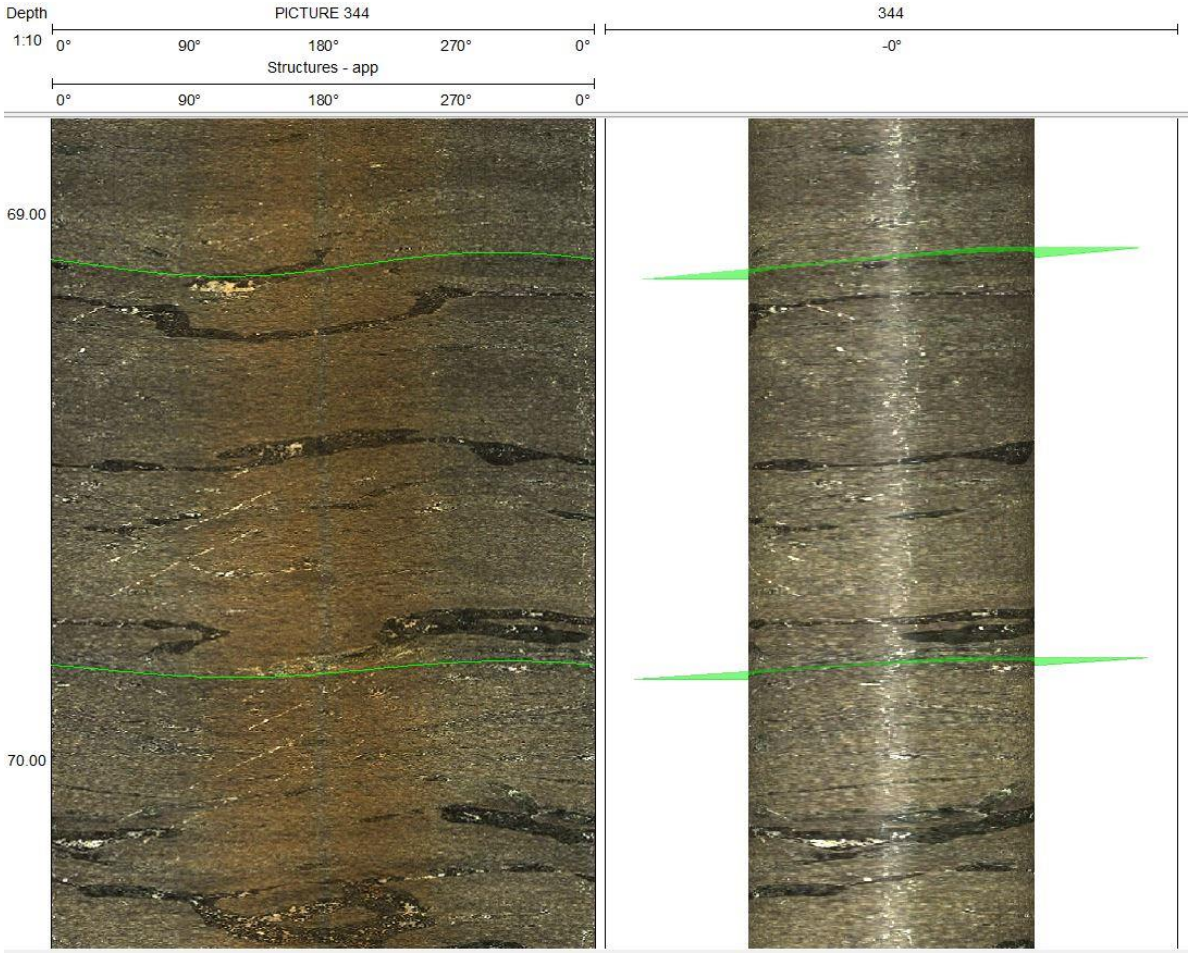


Kenex
Creating opportunities in the spatial world

Downhole logging

Kenex
Creating opportunities in the spatial world

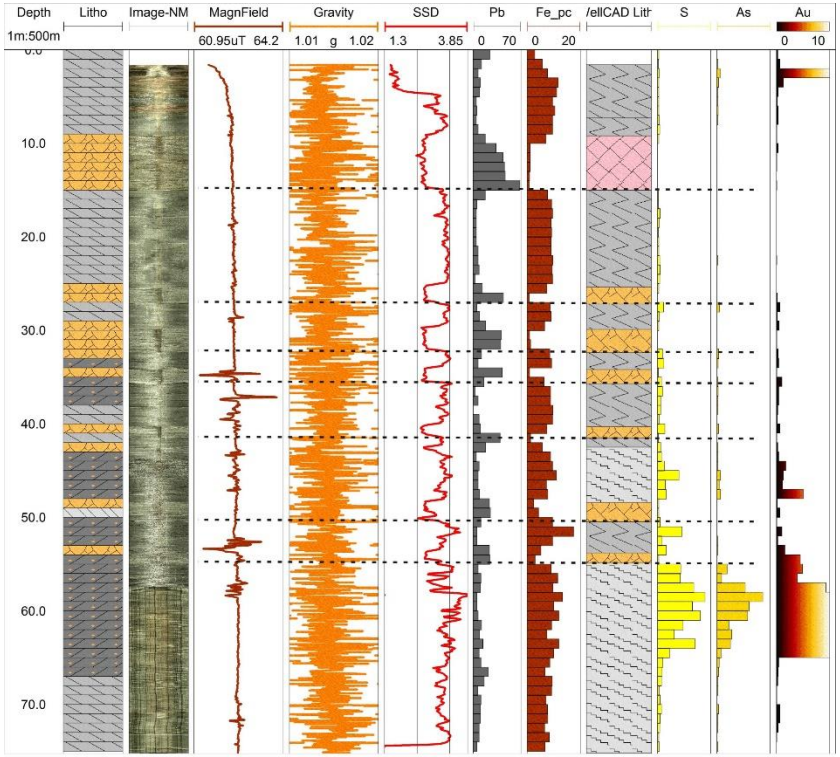
Optical Televiewer Imaging



Kenex
Creating opportunities in the spatial world

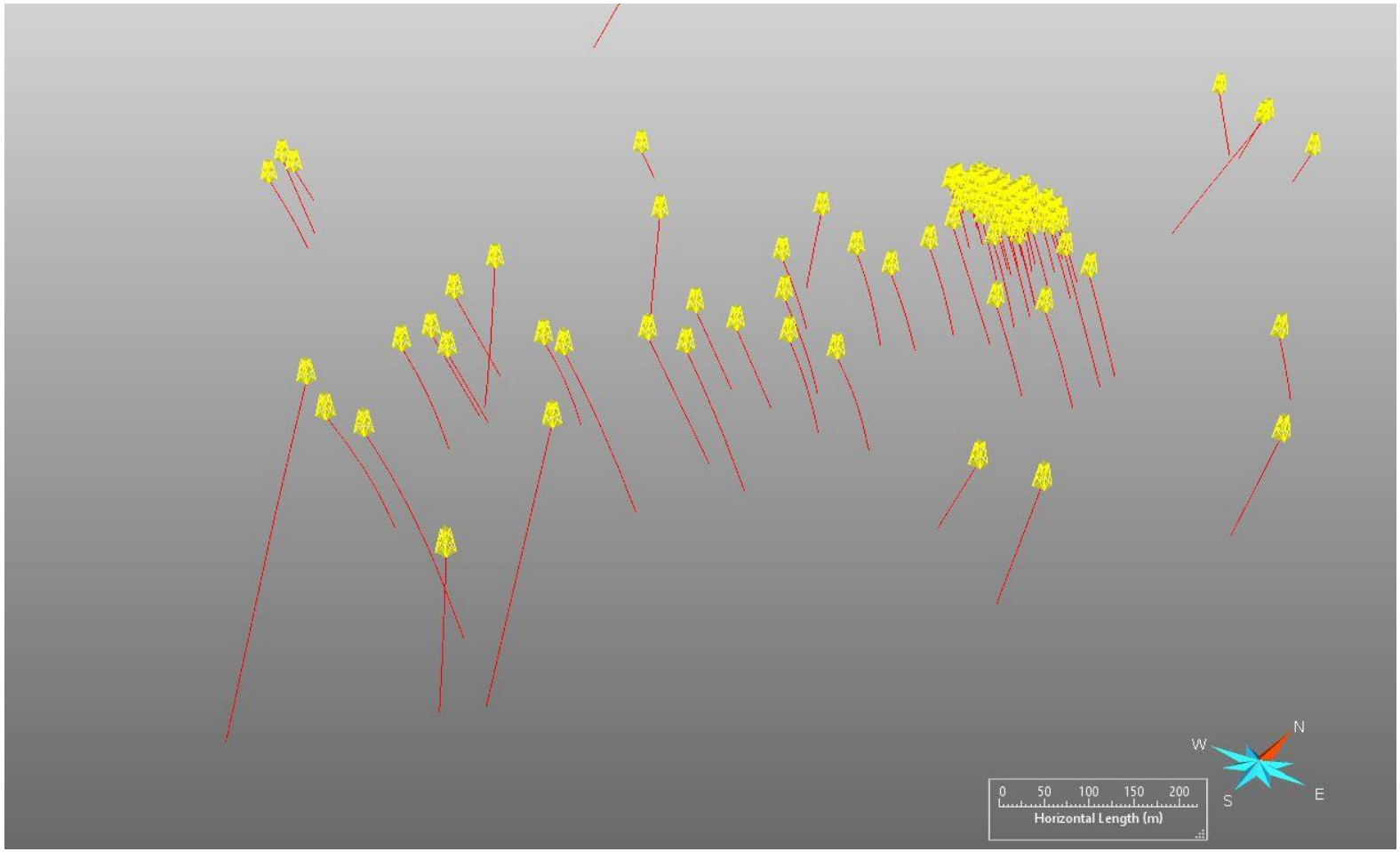
Downhole Logs and Workflows

- Extra workflow to project management
- Cheap and quick acquisition
- Extra workflow to data interpretation
- Large amount of data
- Extra data and better resolution than RC sampling
- Structural orientations from borewall images



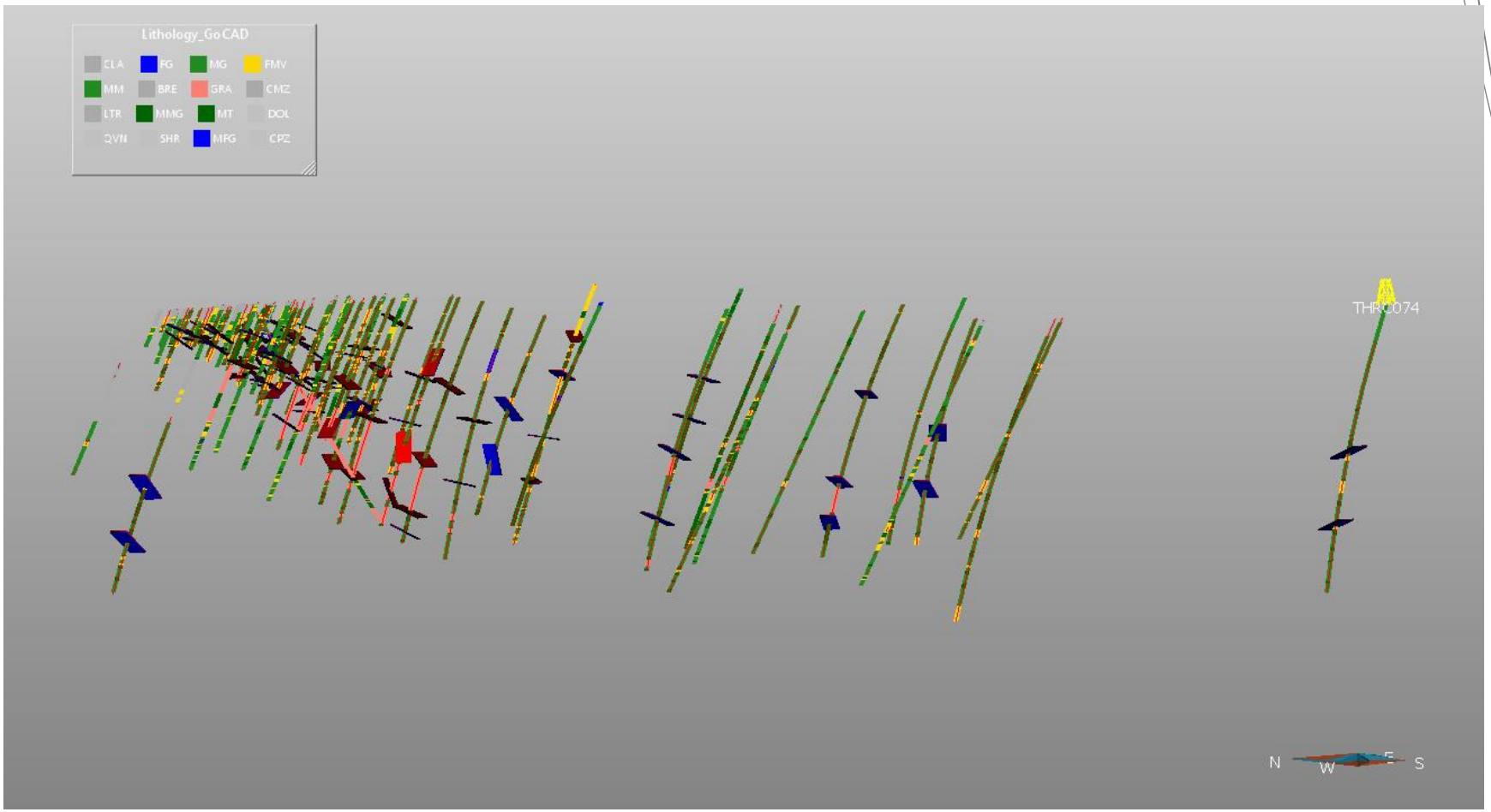
Kenex
Creating opportunities in the spatial world

Tampia RC drilling 2016



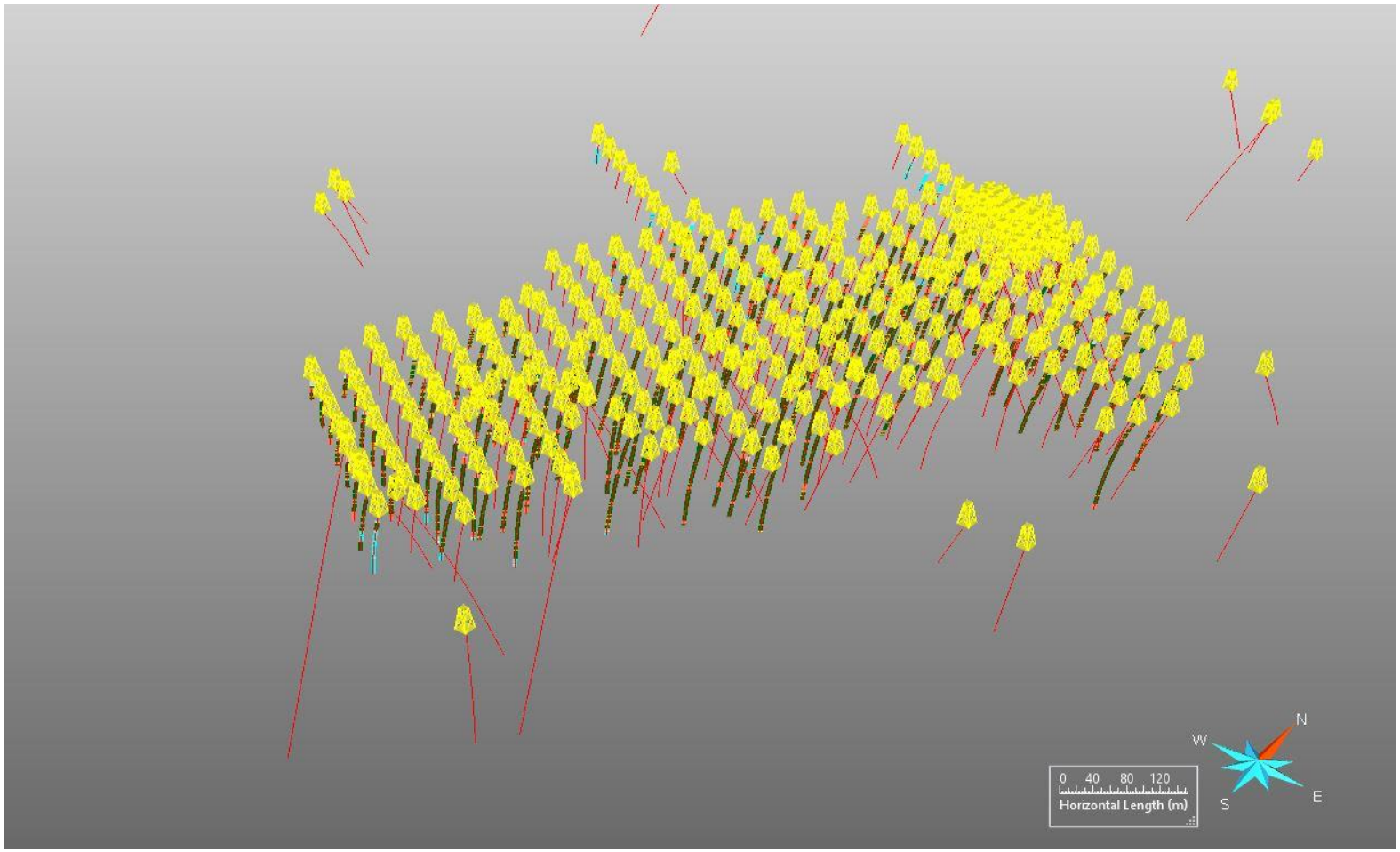
Kenex
Creating opportunities in the spatial world

OTV foliation orientation



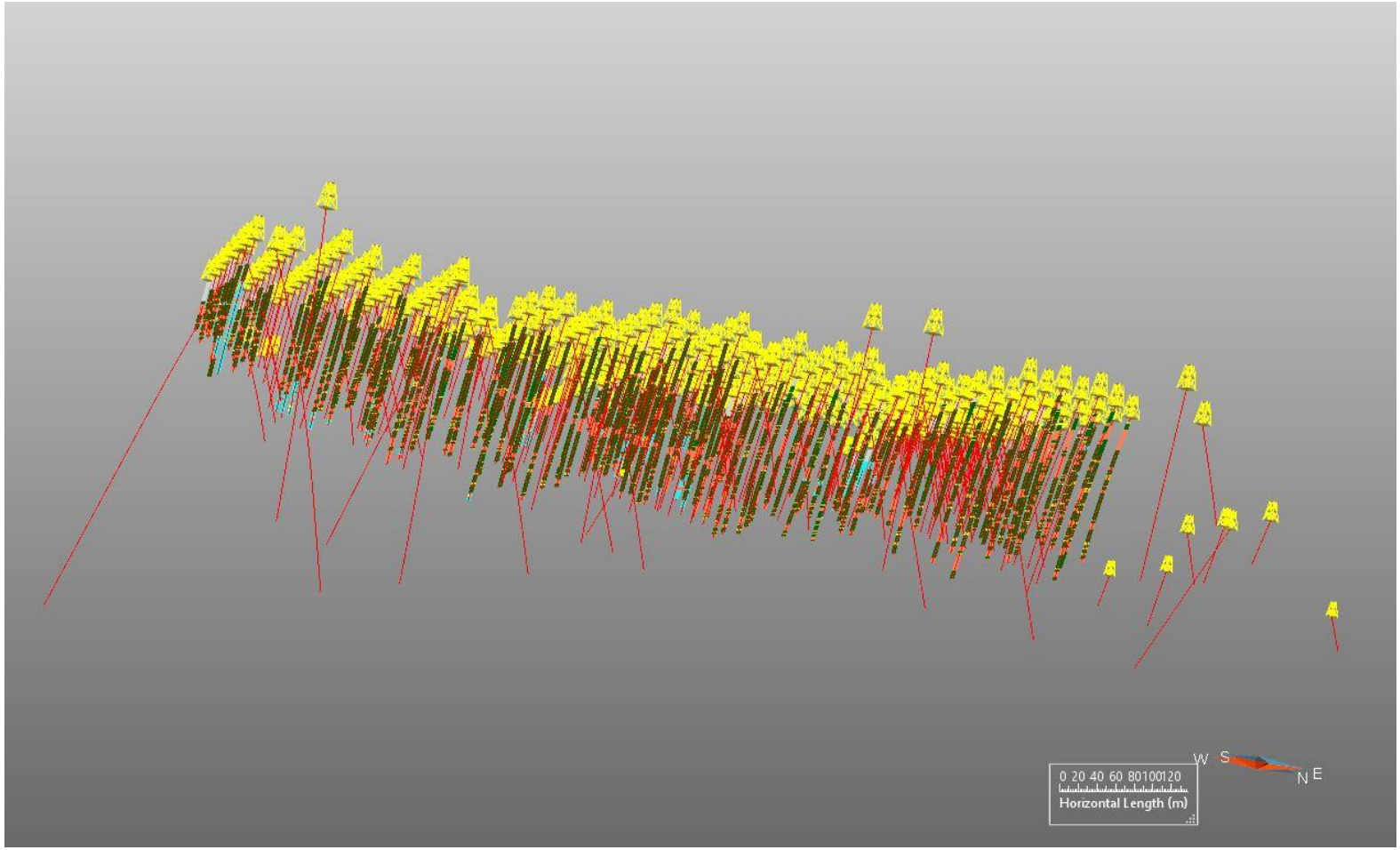
Kenex
Creating opportunities in the spatial world

Tampia RC drilling 2017



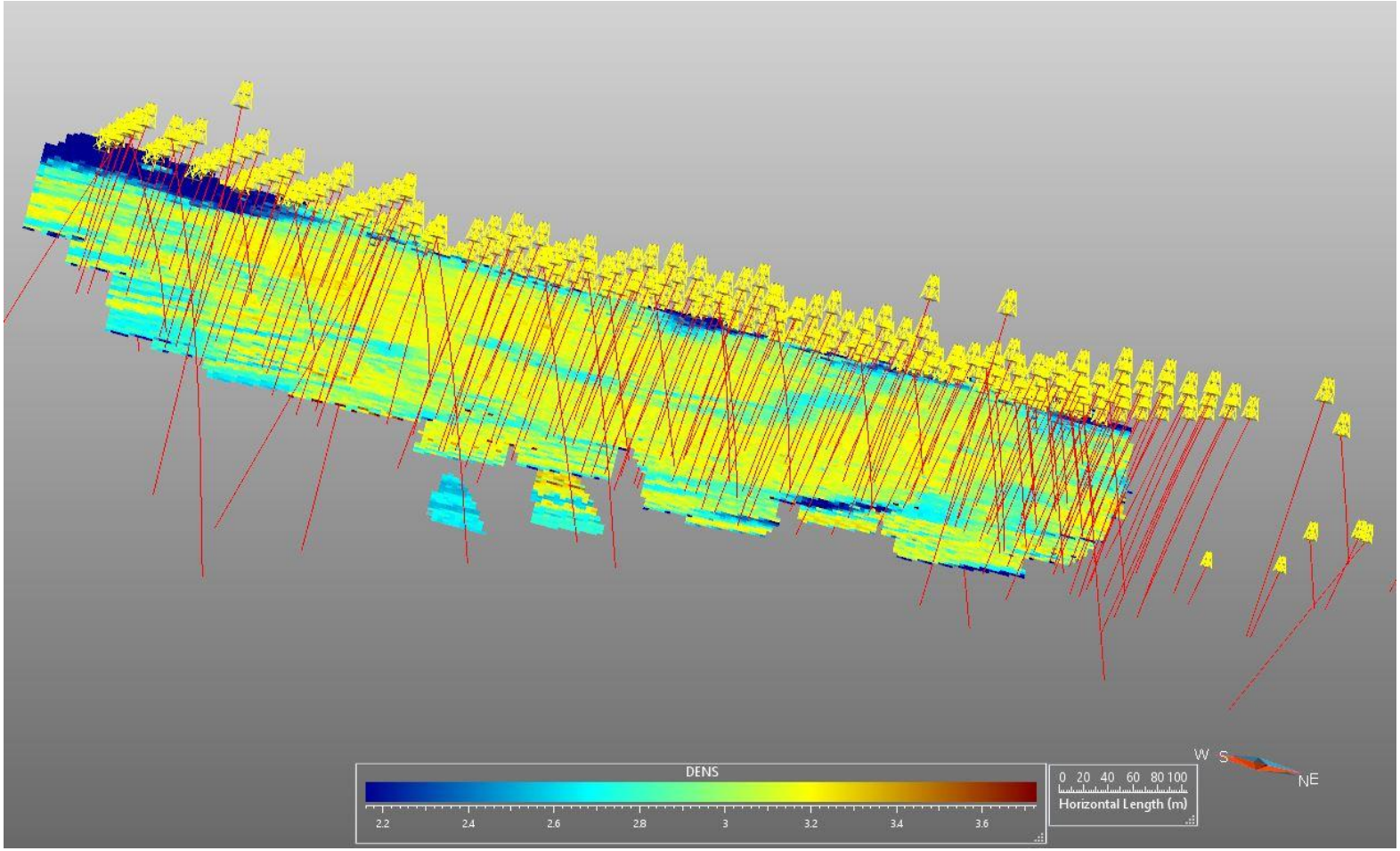
Kenex
Creating opportunities in the spatial world

Tampia geology



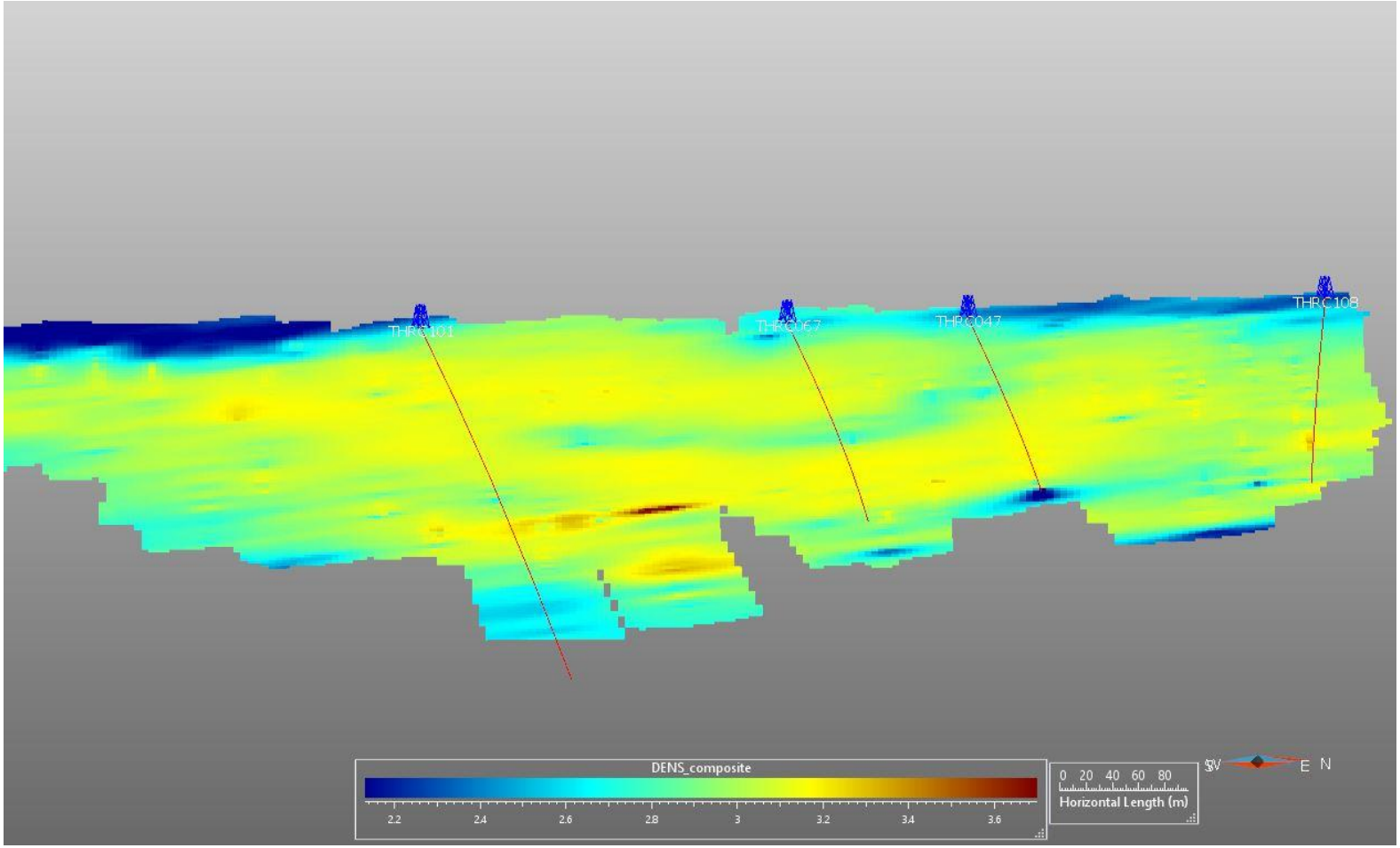
Kenex
Creating opportunities in the spatial world

Density interpolation



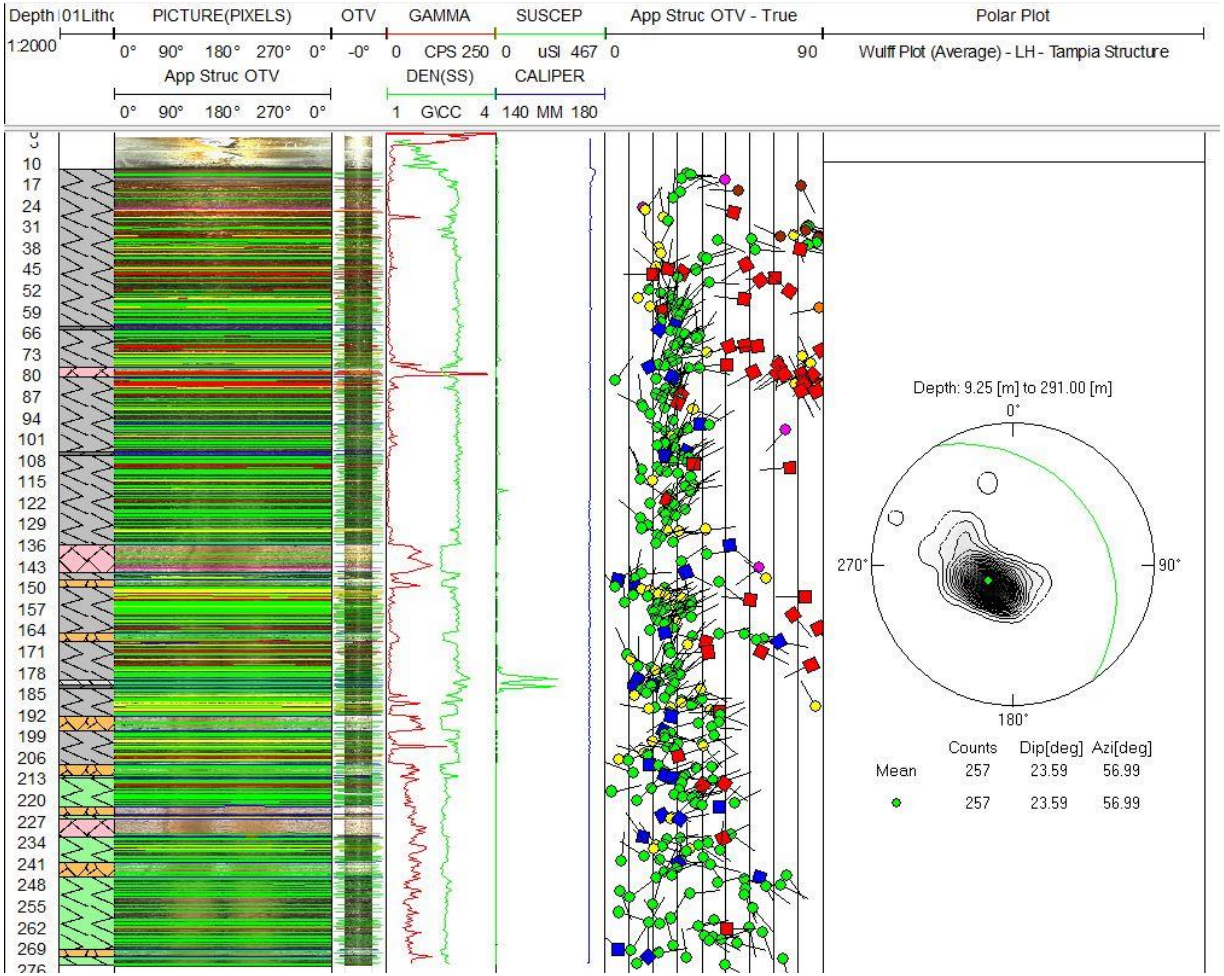
Kenex
Creating opportunities in the spatial world

Trends and types of granite



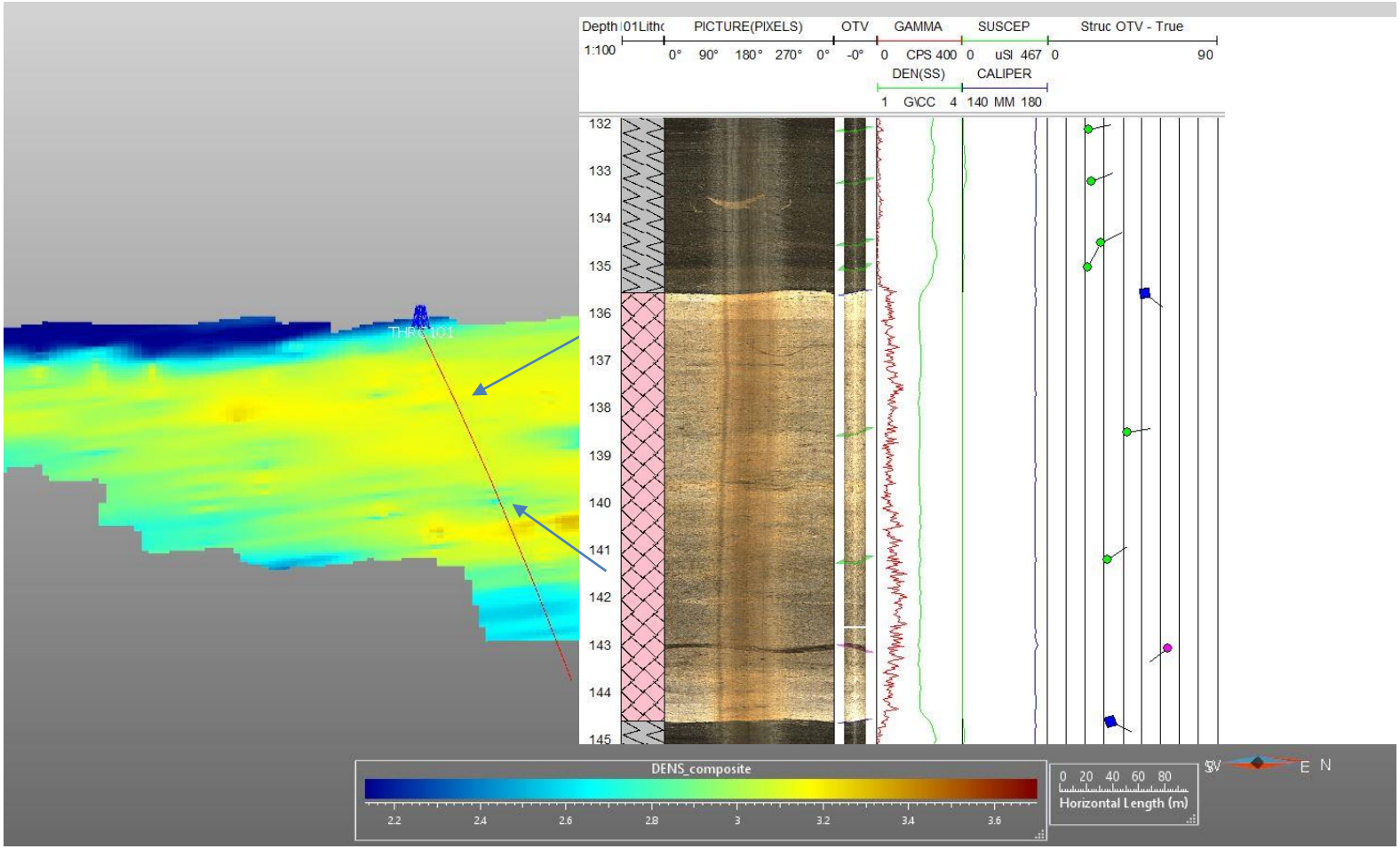
Kenex
Creating opportunities in the spatial world

THRC101, far south



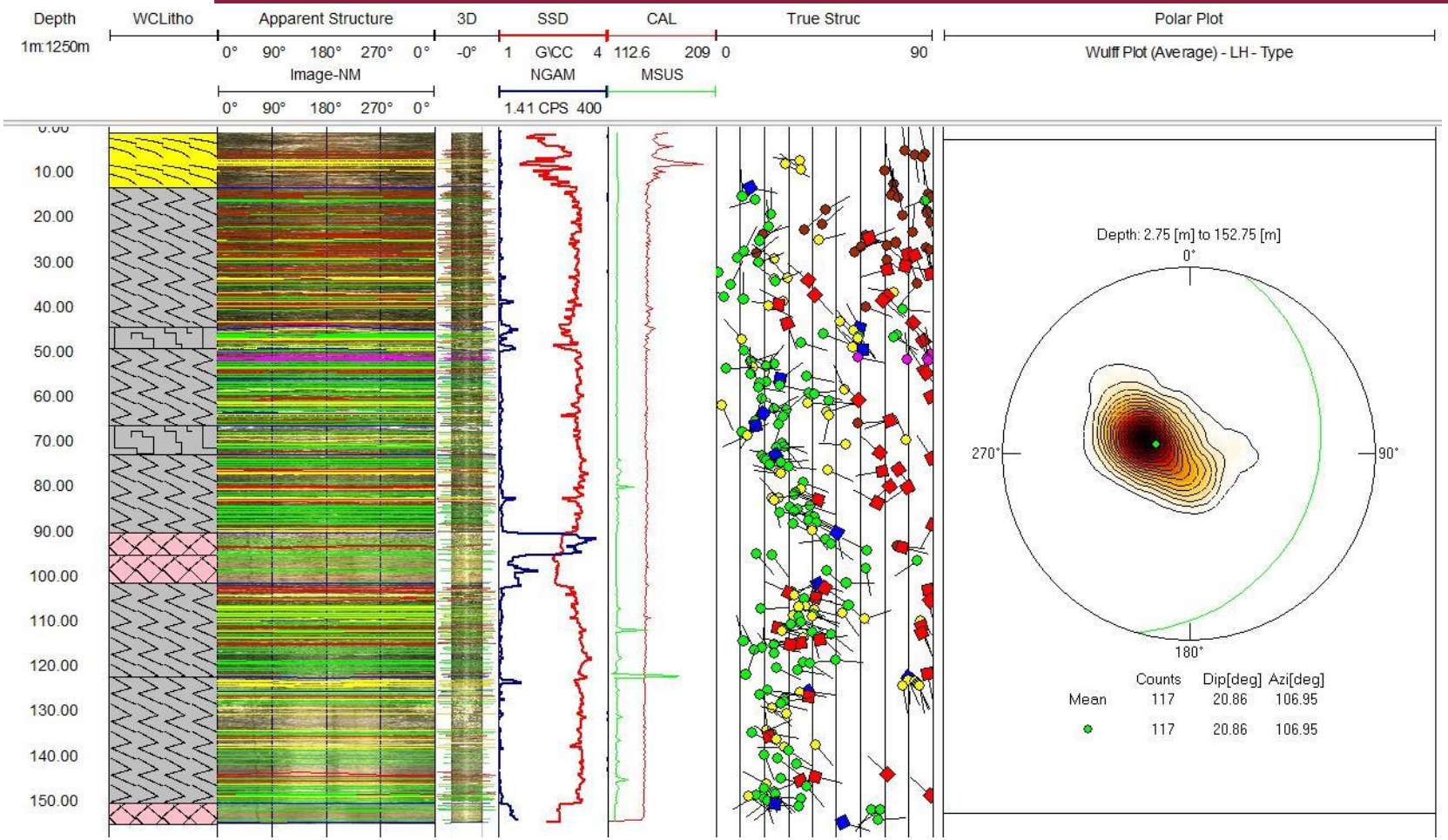
Kenex
Creating opportunities in the spatial world

Granite characteristics, THRC101



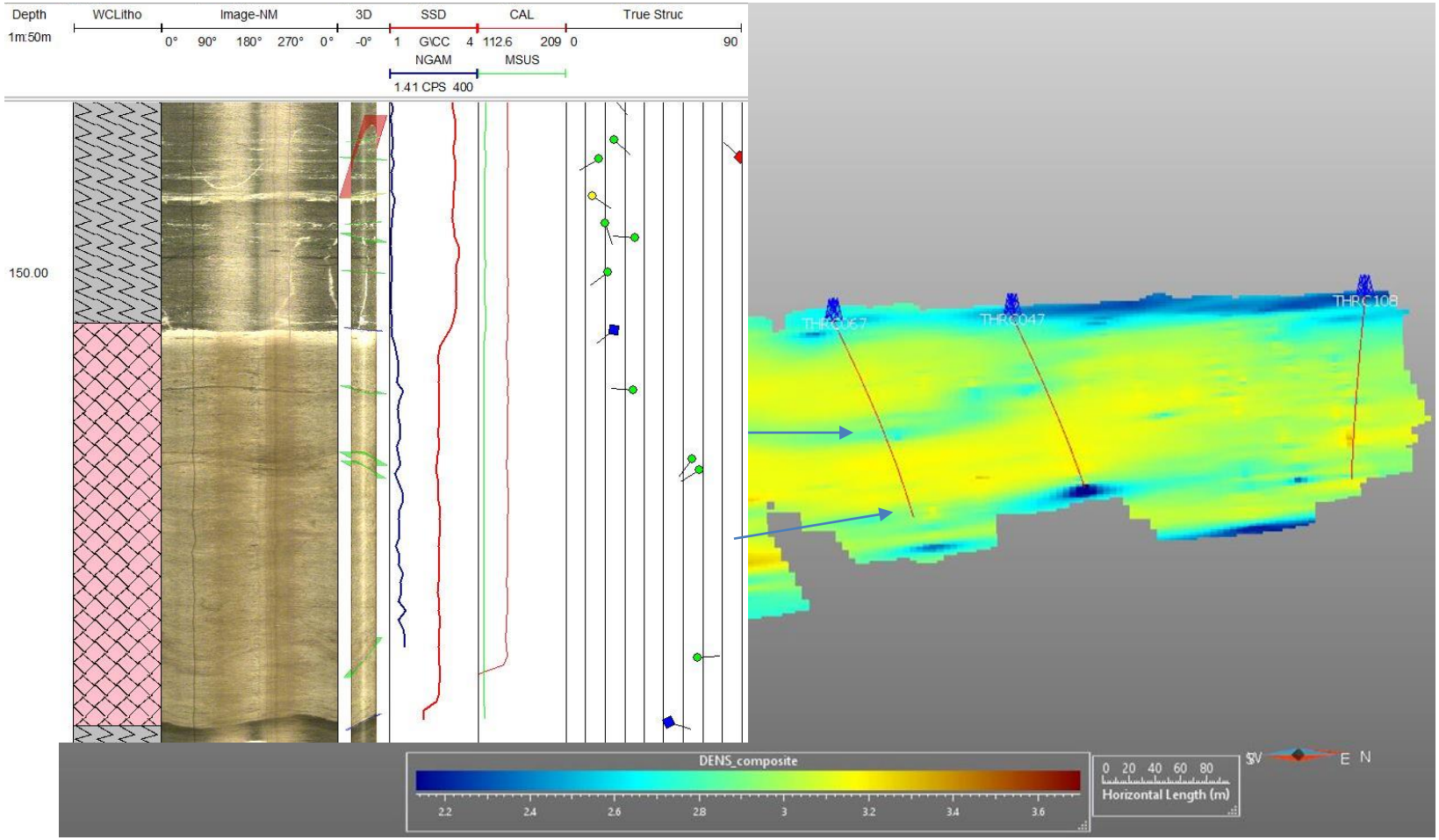
Kenex
Creating opportunities in the spatial world

THRC067, south central



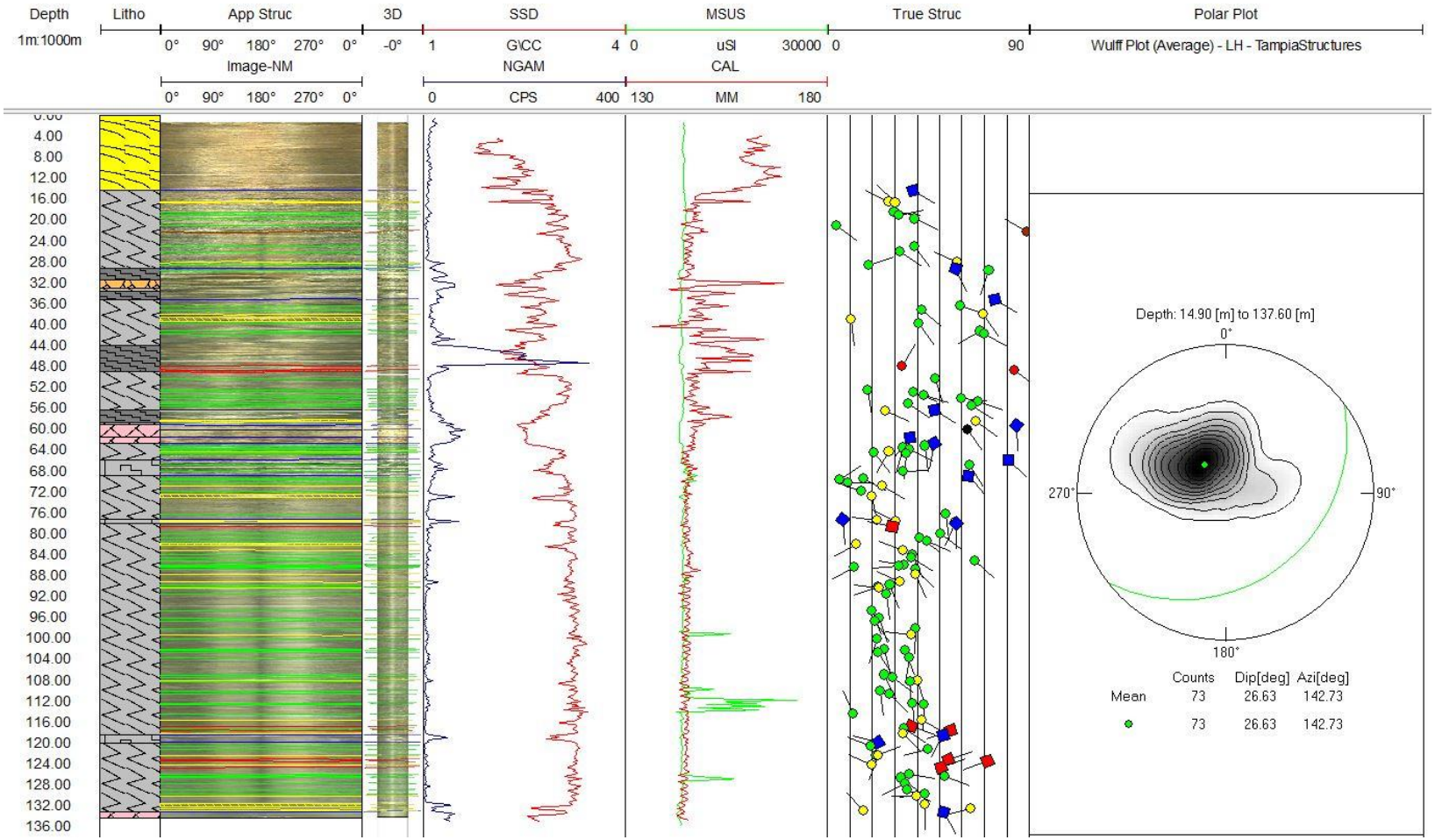
Kenex
Creating opportunities in the spatial world

Granite characteristics, THRC067



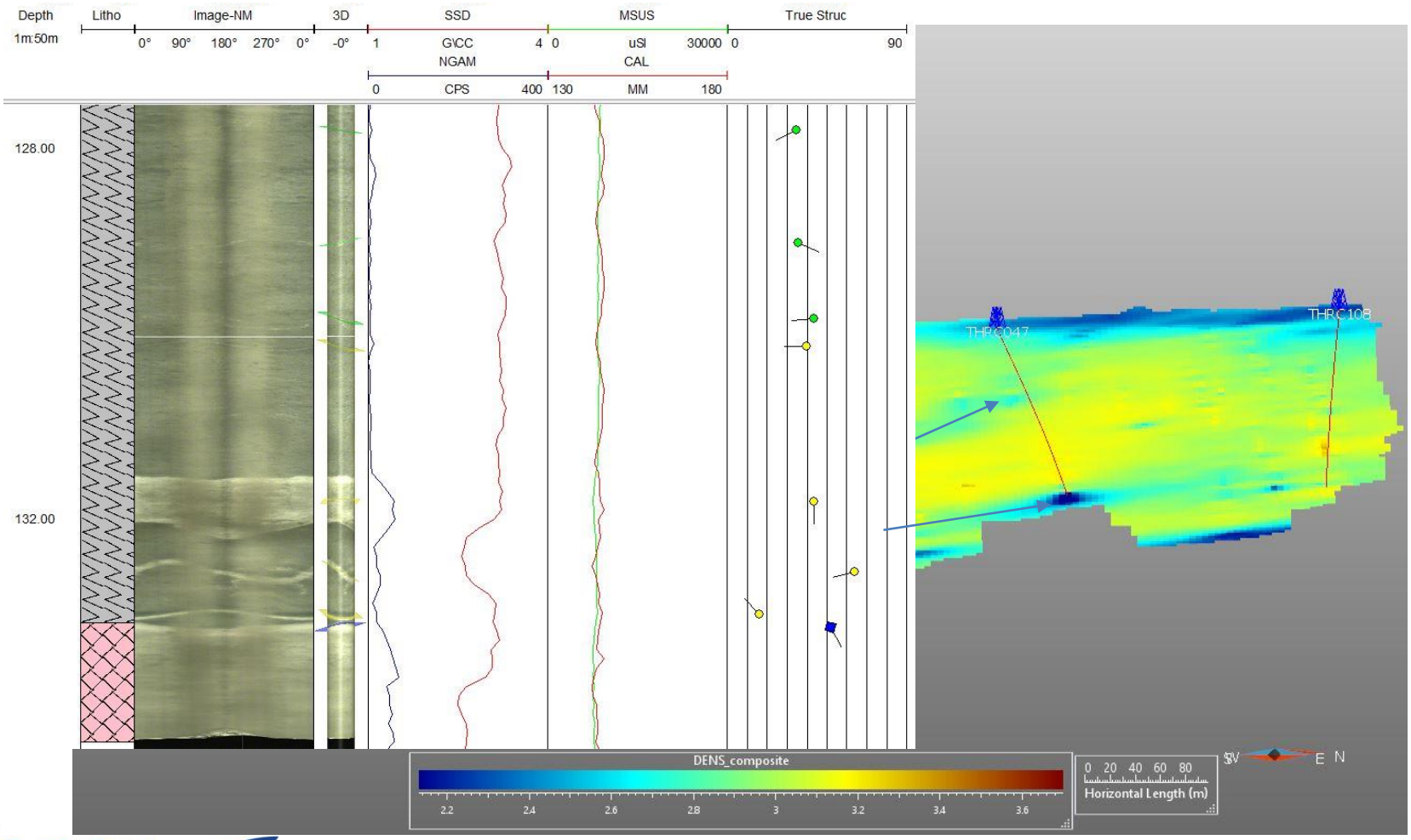
Kenex
Creating opportunities in the spatial world

THRC047, north central



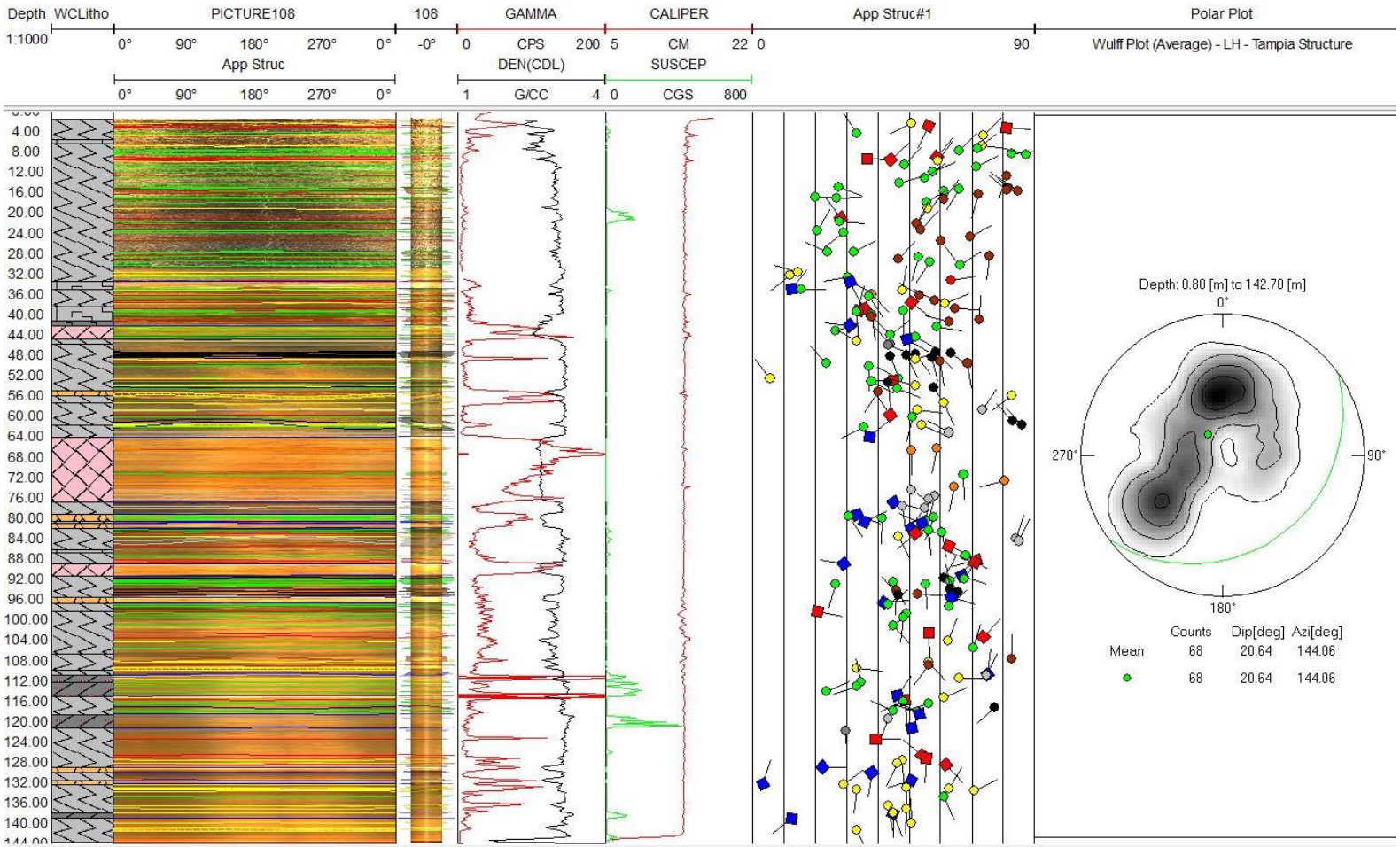
Kenex
Creating opportunities in the spatial world

Granite characteristics, THRC047



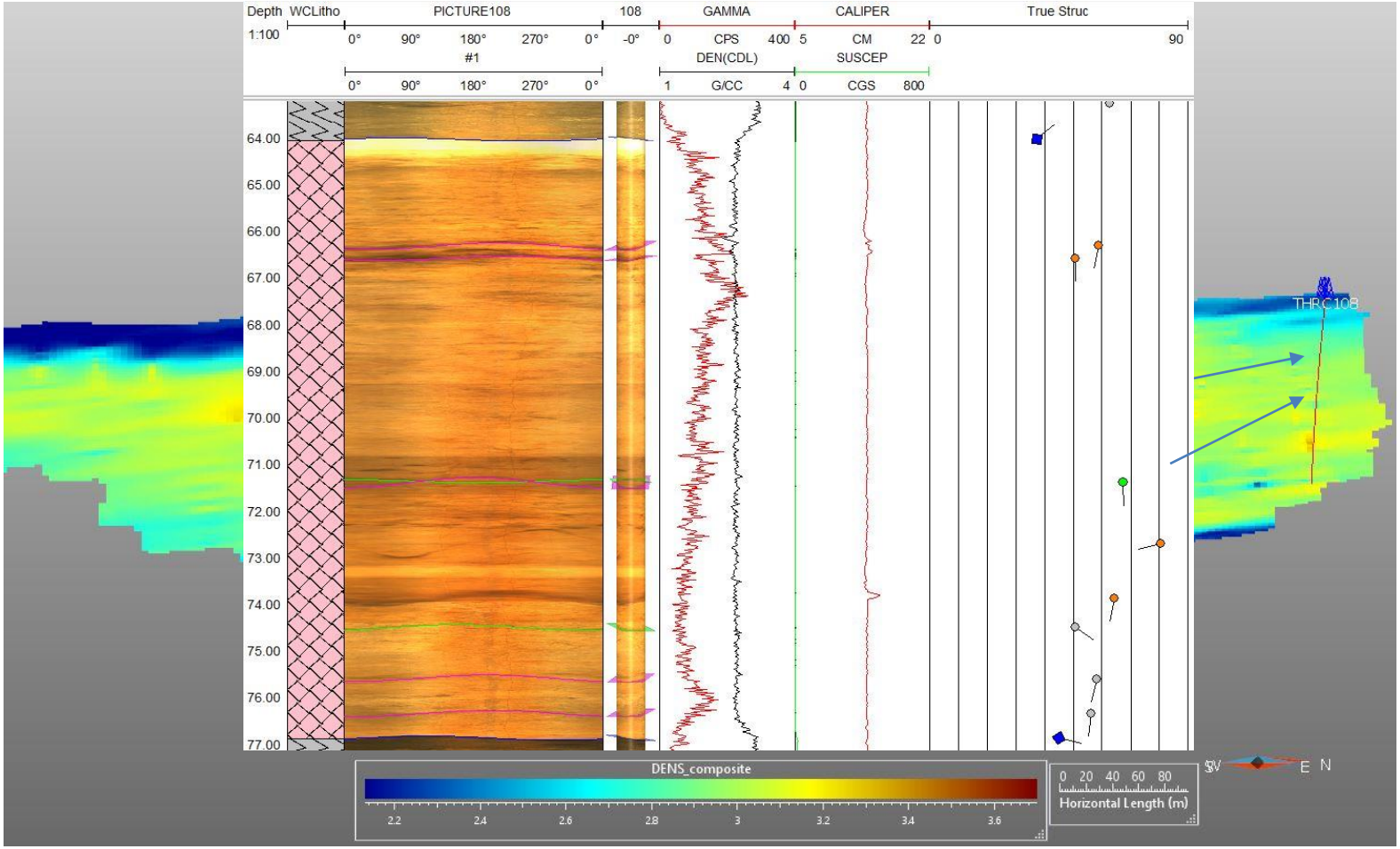
Kenex
Creating opportunities in the spatial world

THRC108, far north



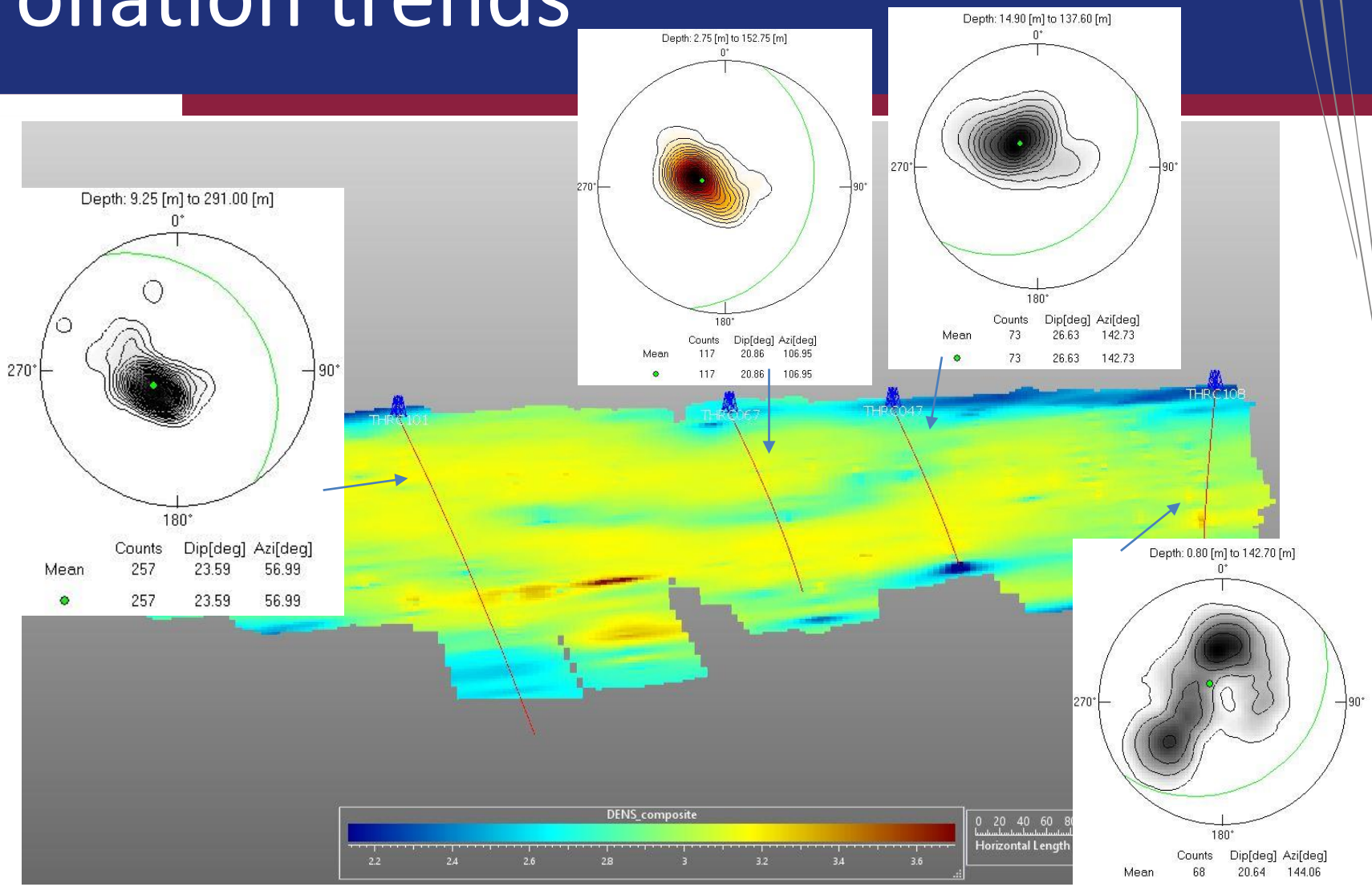
Kenex
Creating opportunities in the spatial world

Granite characteristics, THRC108



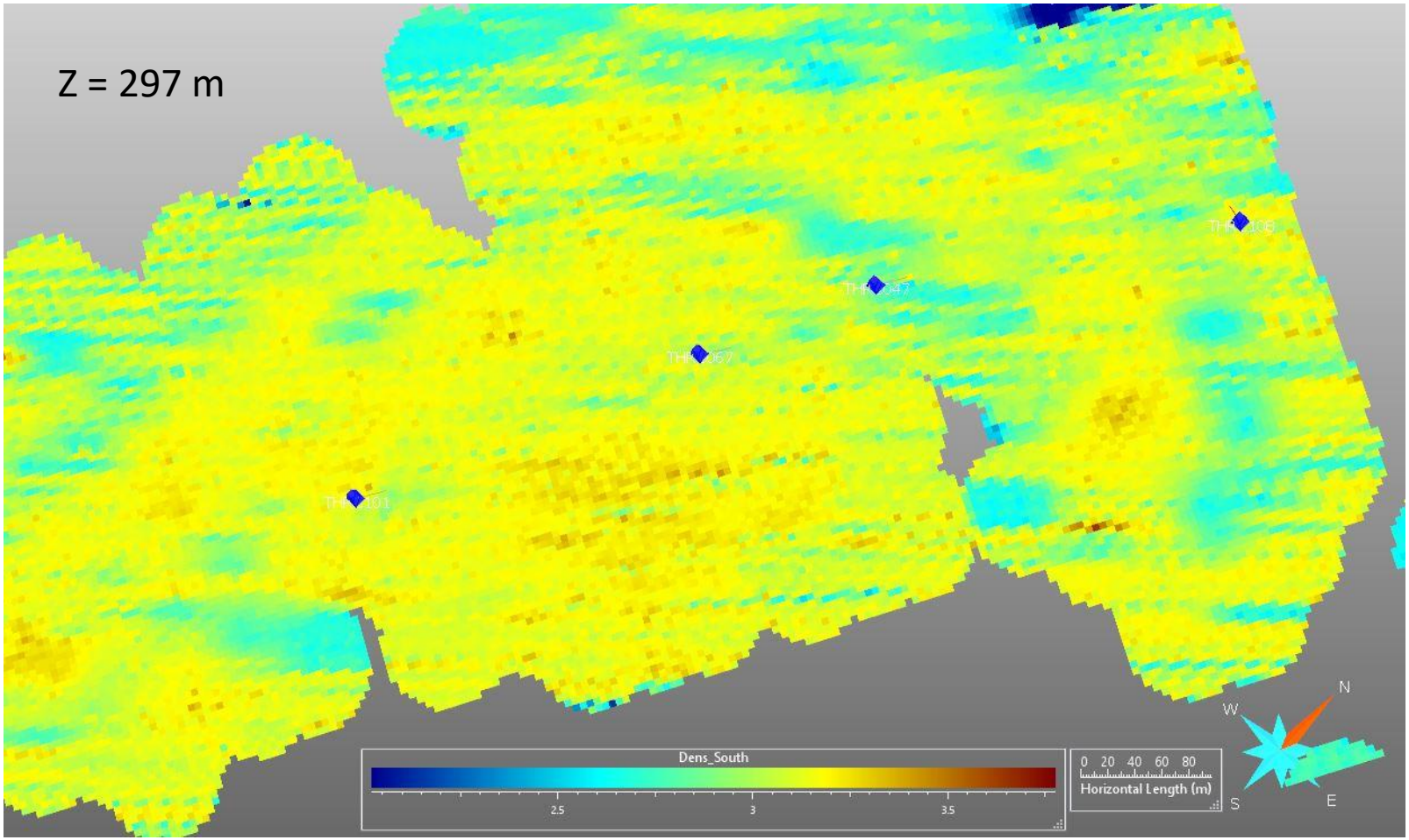
Kenex
Creating opportunities in the spatial world

Foliation trends



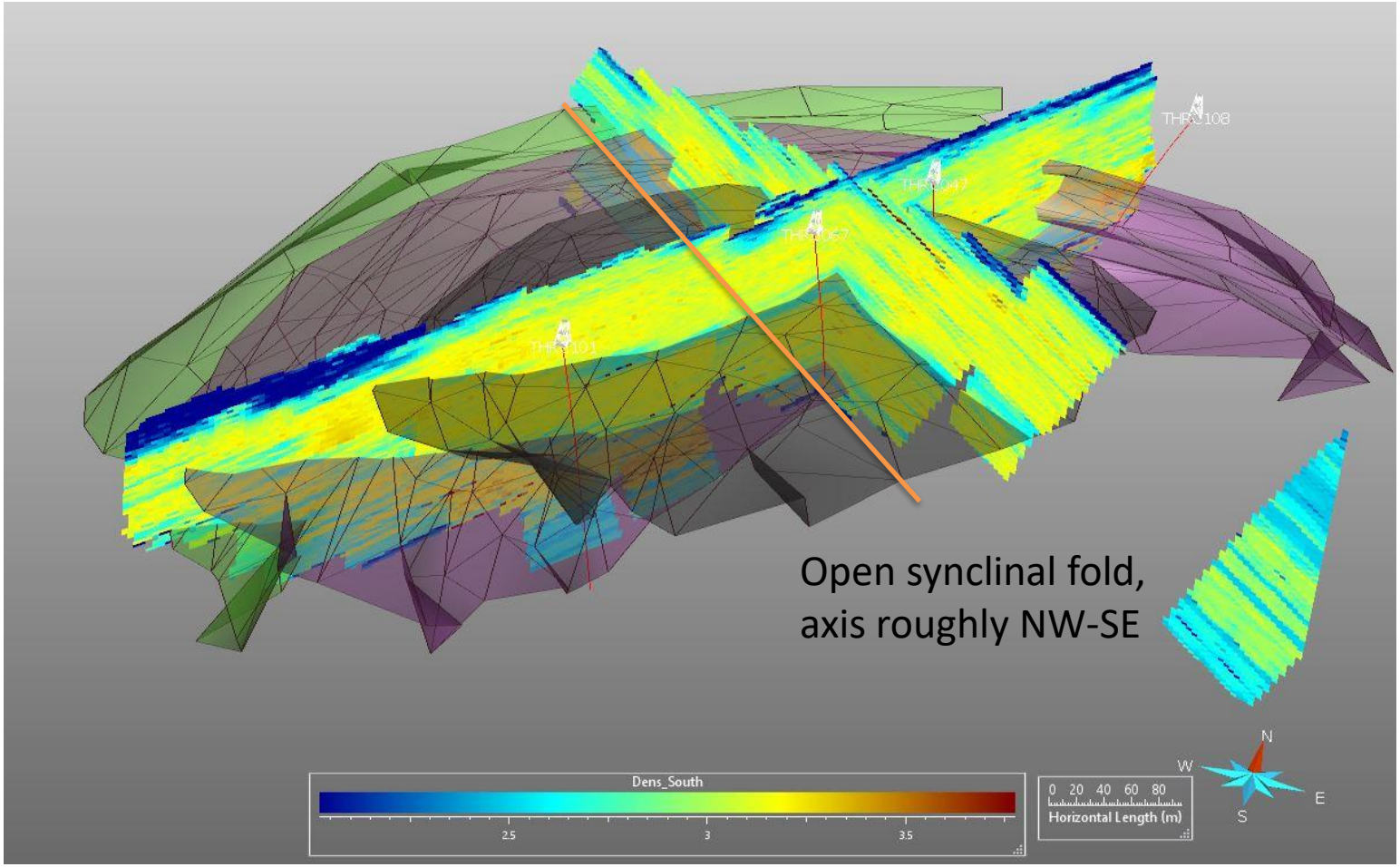
Kenex
Creating opportunities in the spatial world

Structure trends from density



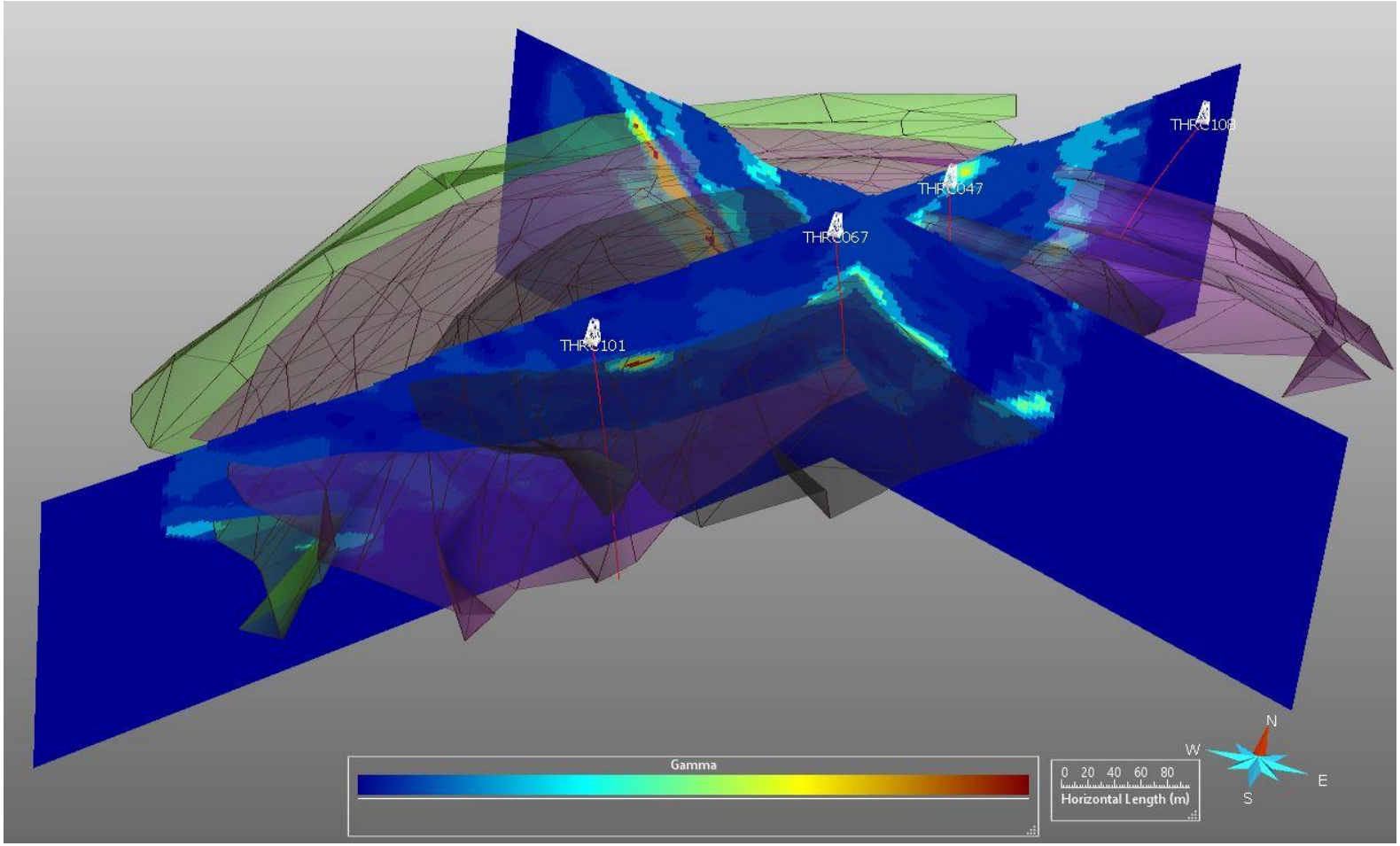
Kenex
Creating opportunities in the spatial world

Structure trends from density



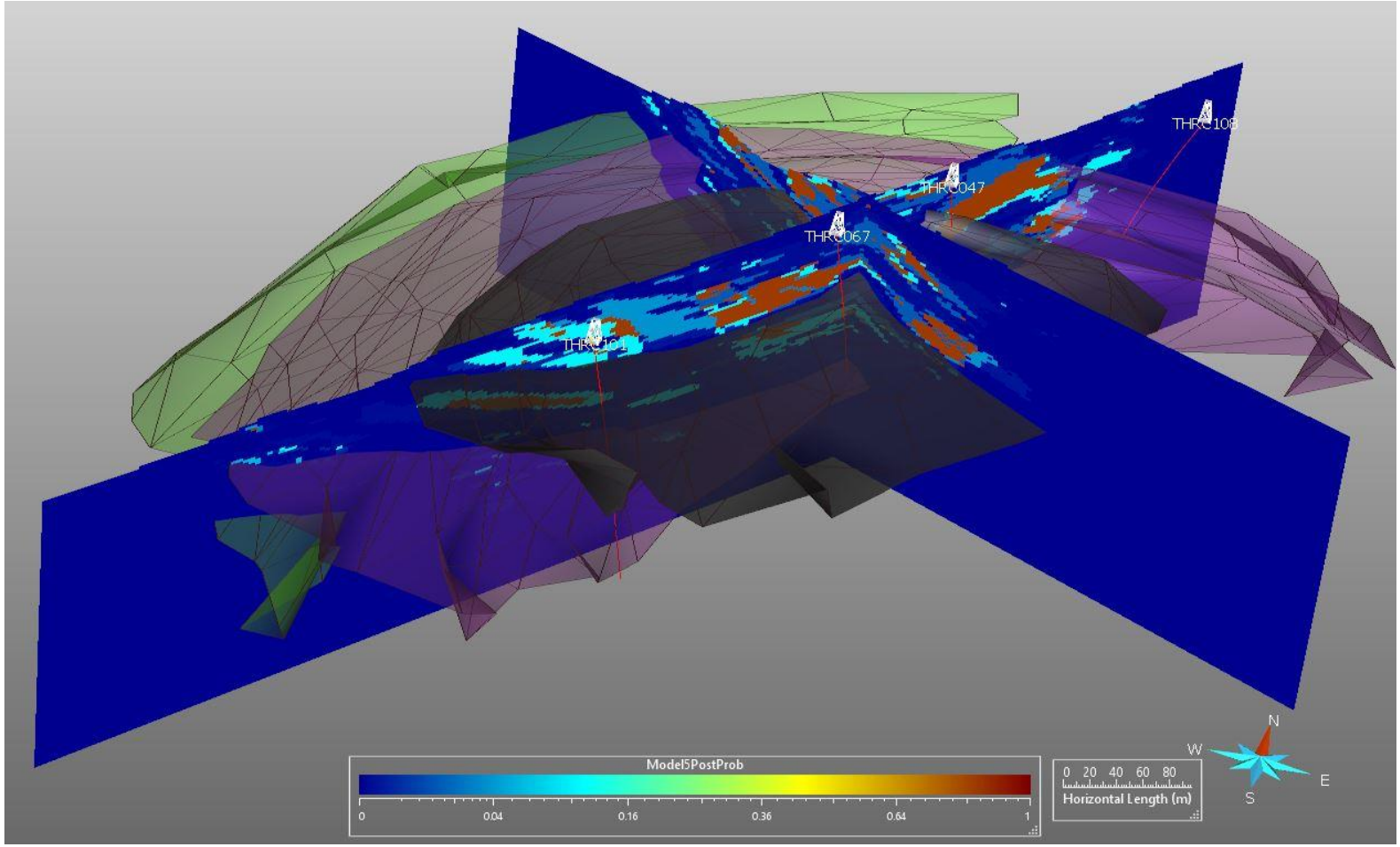
Kenex
Creating opportunities in the spatial world

Structure trend vs natural gamma



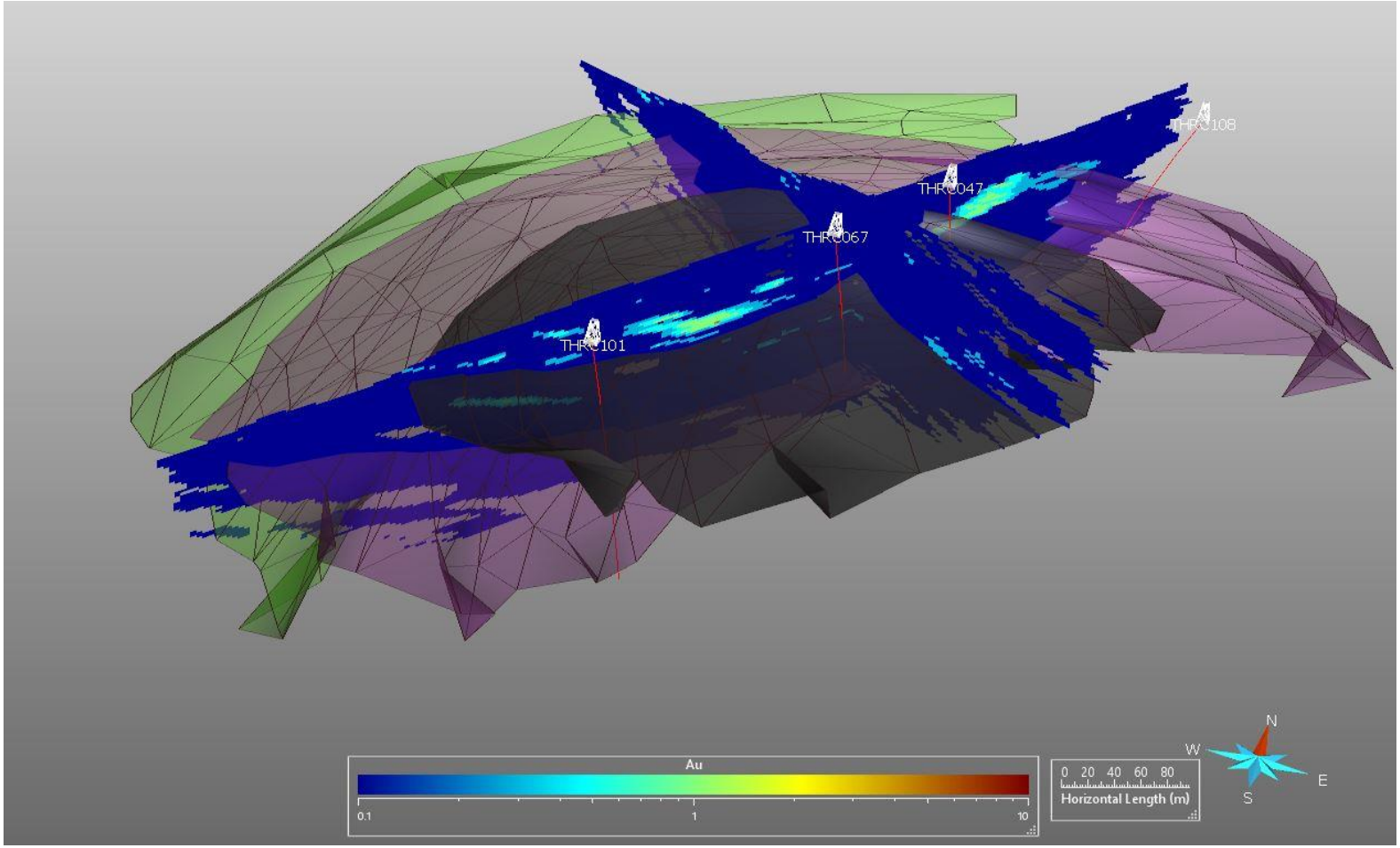
Kenex
Creating opportunities in the spatial world

Mineral potential model



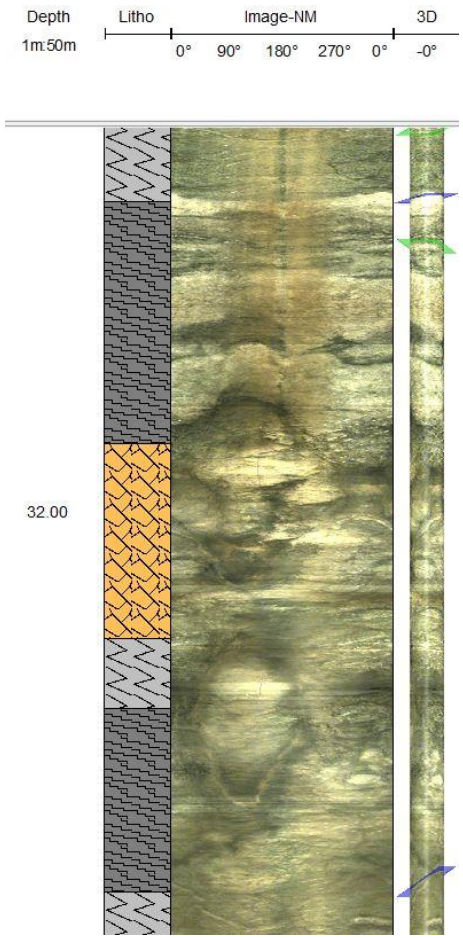
Kenex
Creating opportunities in the spatial world

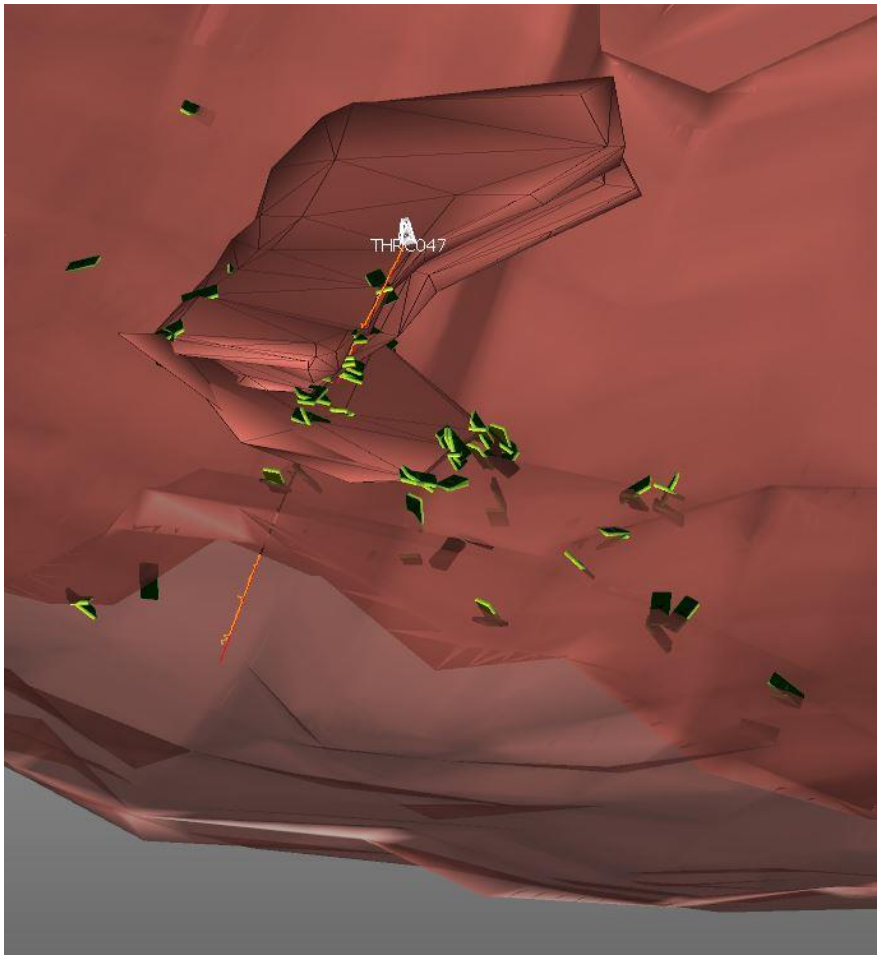
Au distribution



Kenex
Creating opportunities in the spatial world

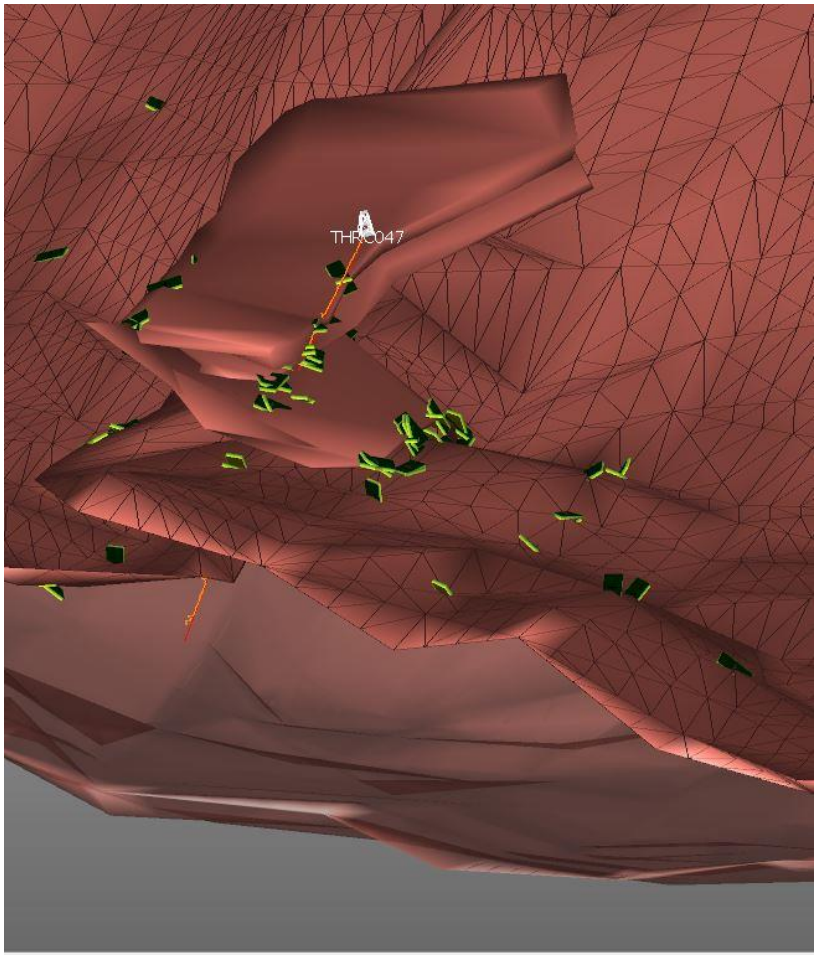
THRC047, structural mess





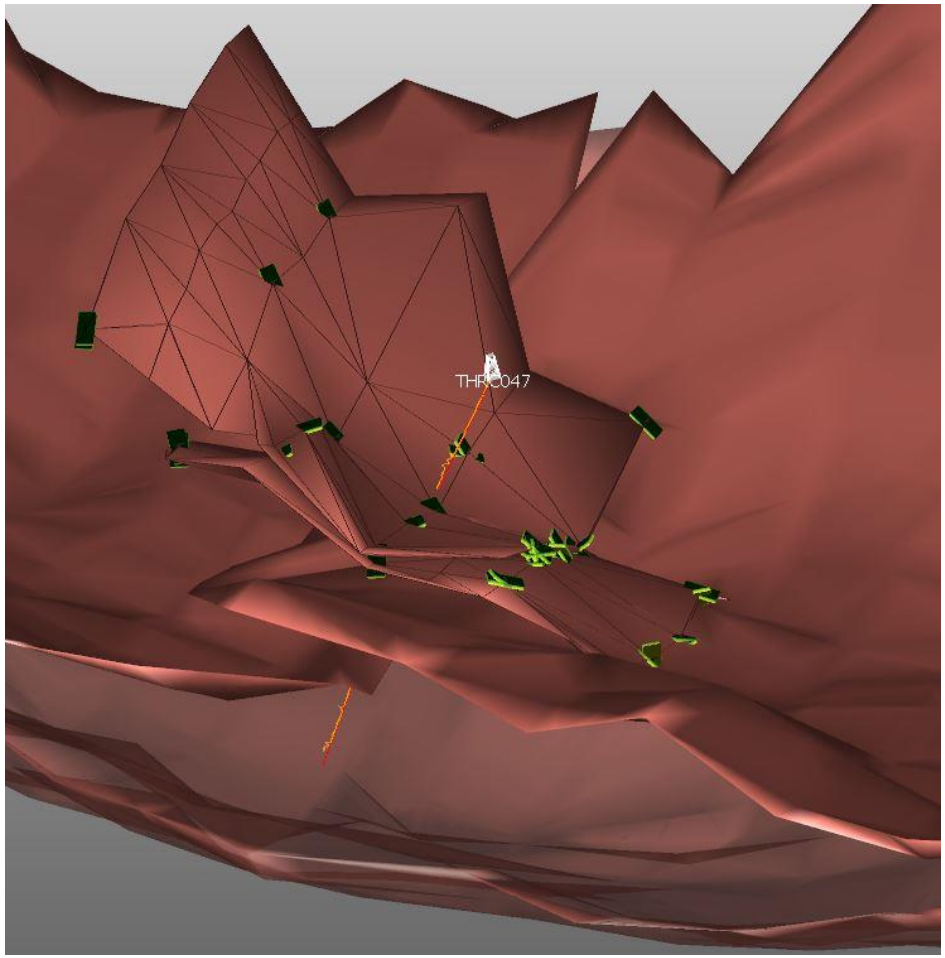
Kenex
Creating opportunities in the spatial world

Adjusting granite orientation



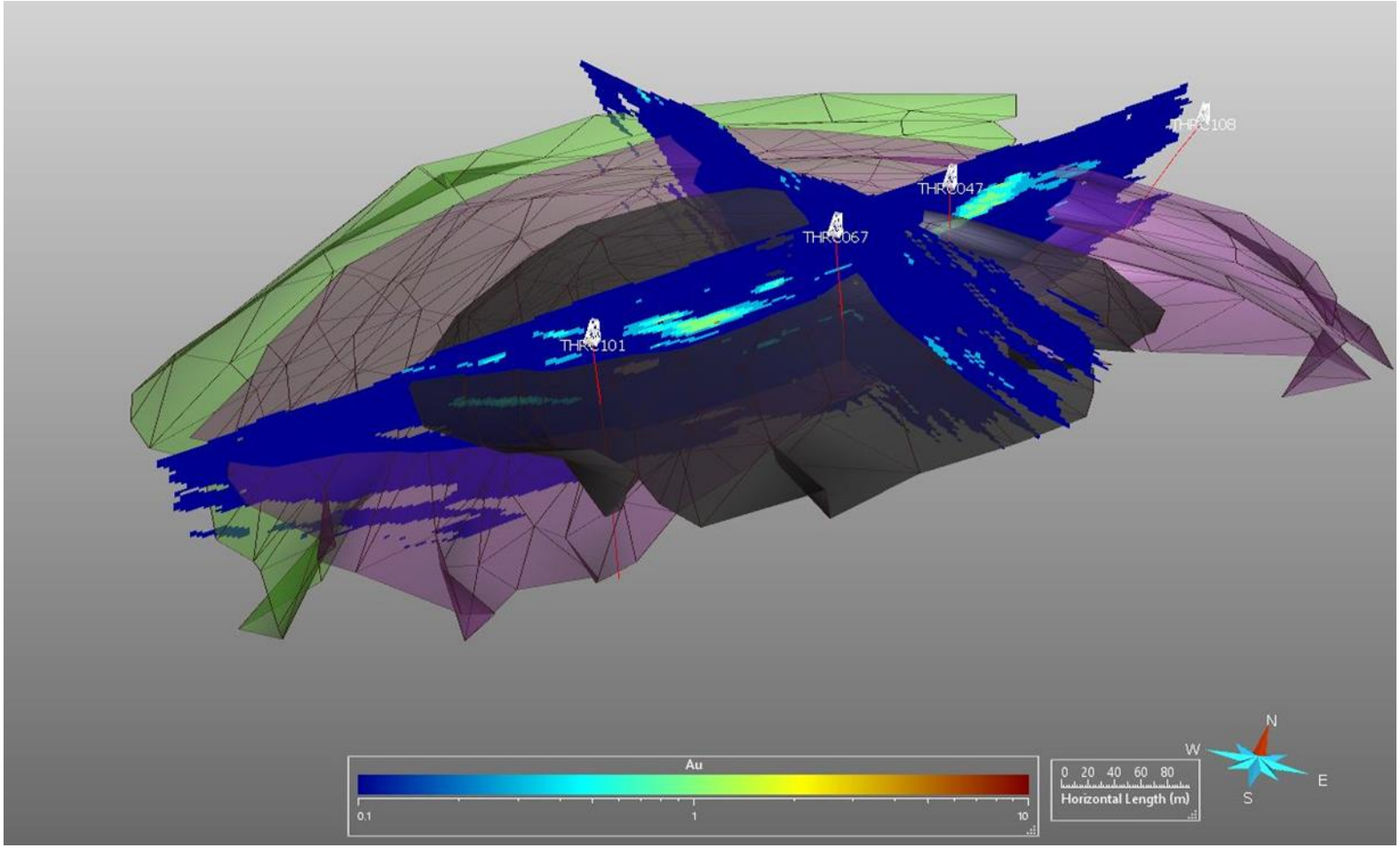
Kenex
Creating opportunities in the spatial world

Reorientation from structural observations



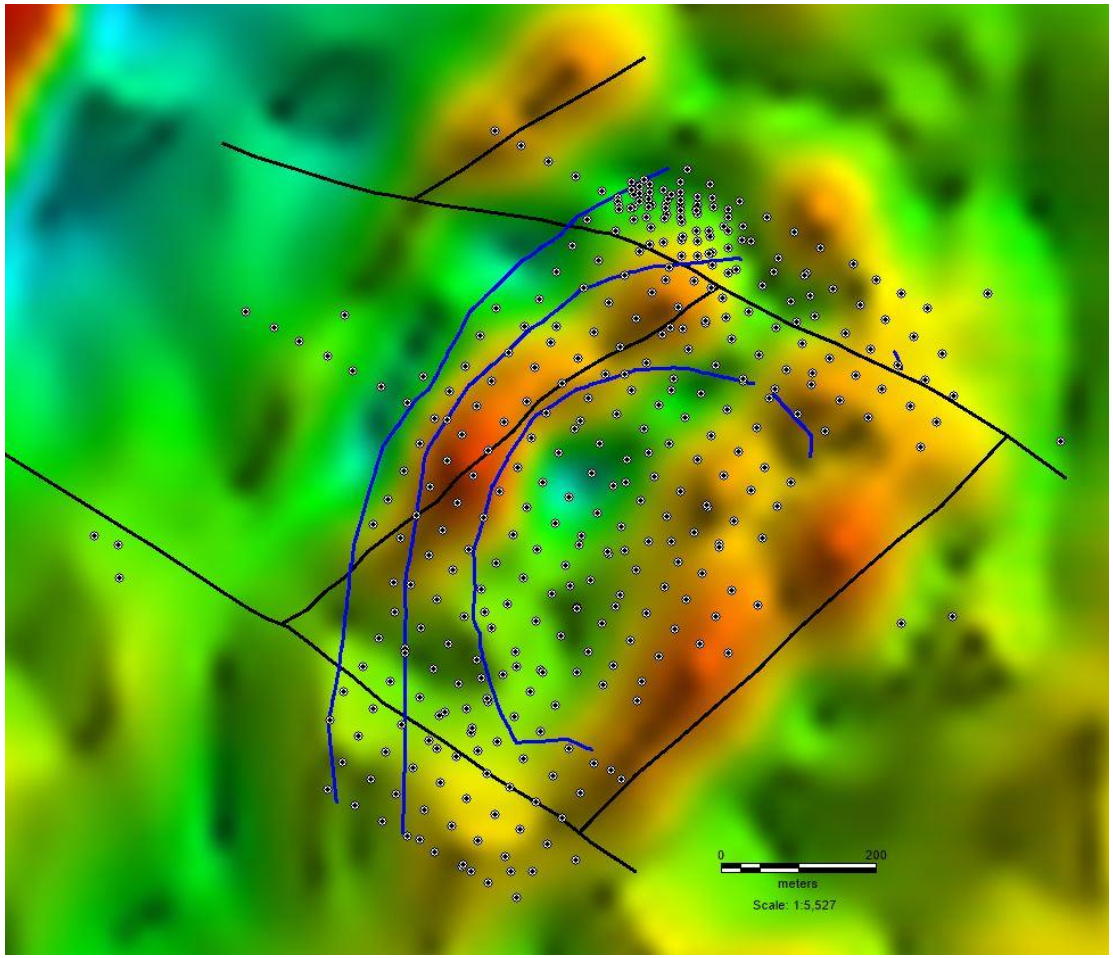
Kenex
Creating opportunities in the spatial world

Revised model



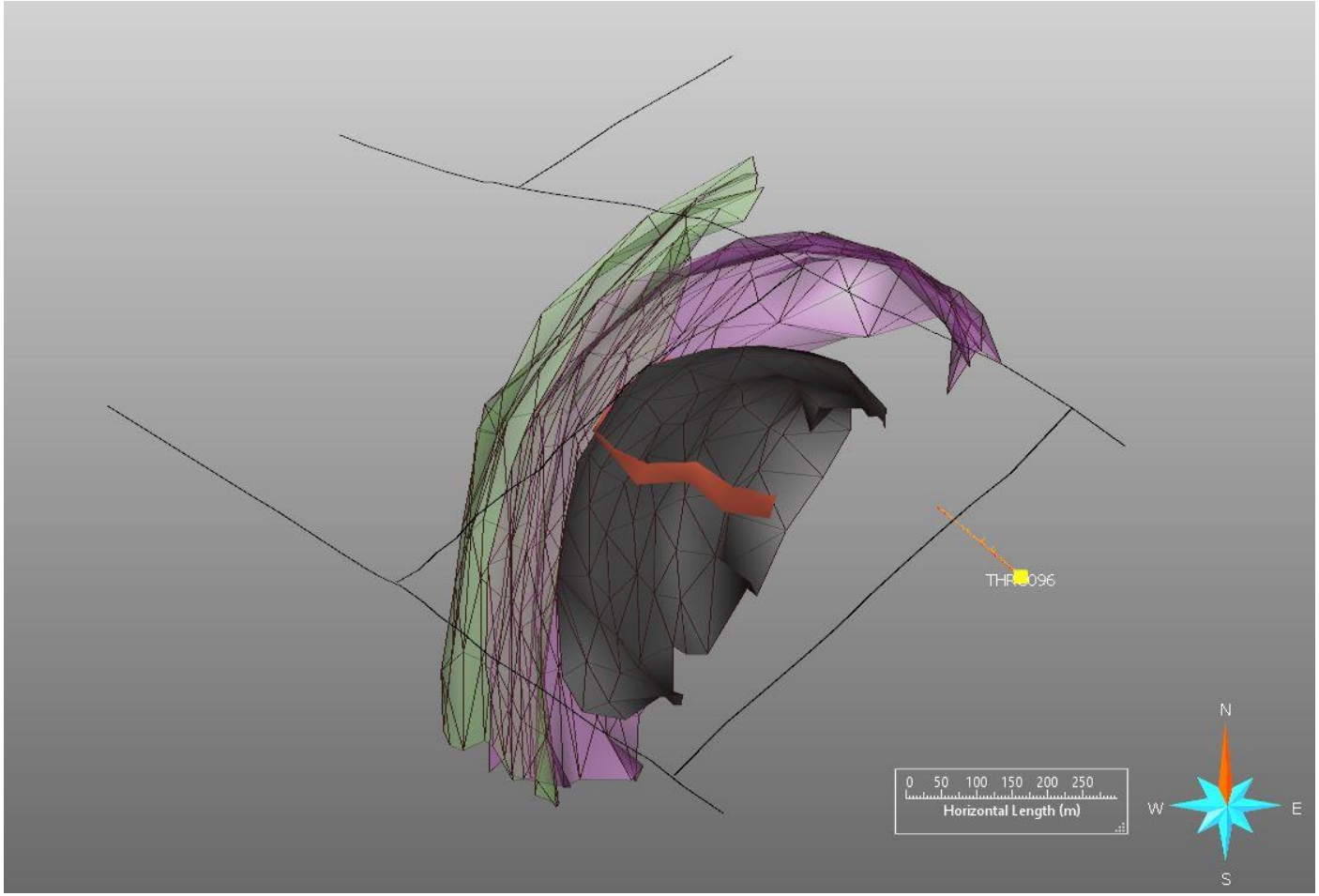
Kenex
Creating opportunities in the spatial world

Magnetics = deep structures



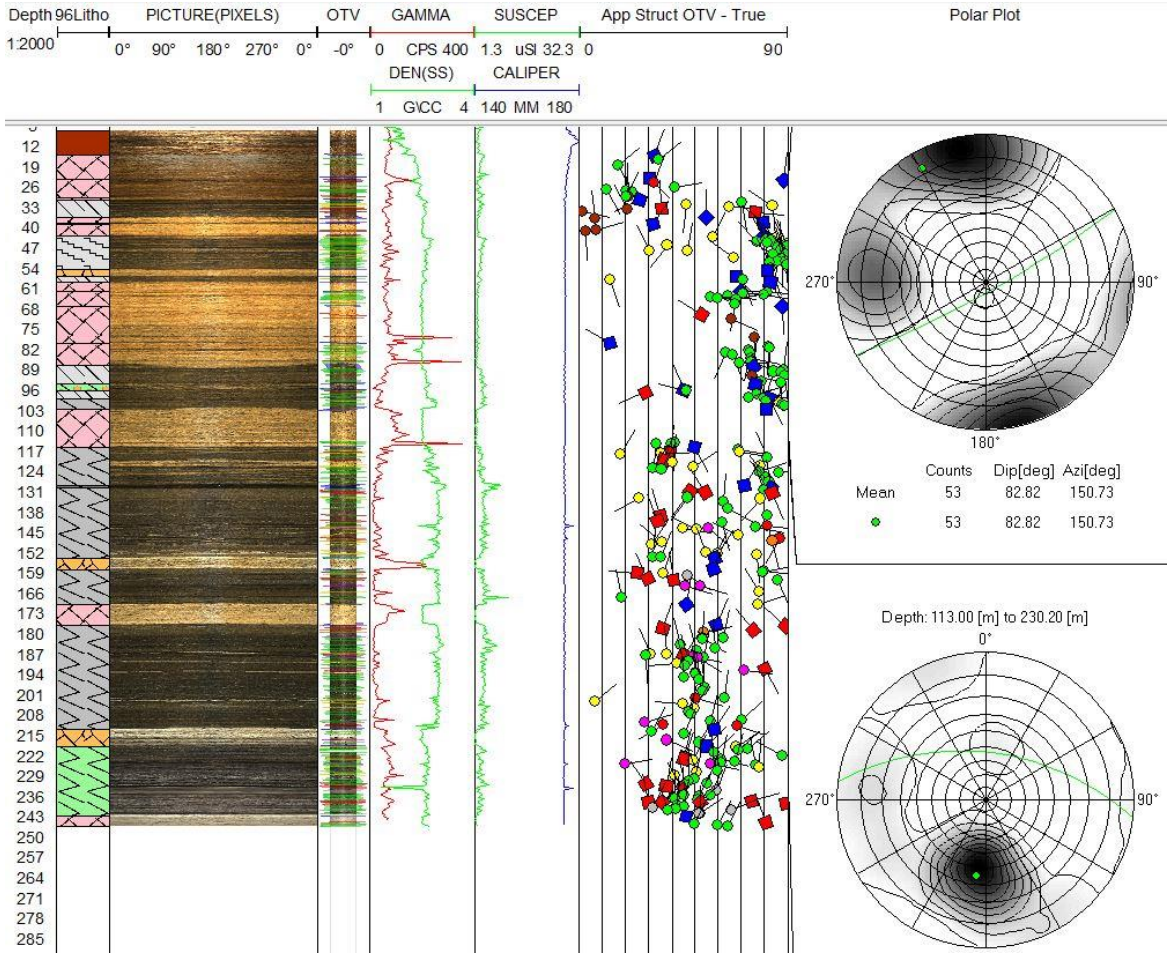
Kenex
Creating opportunities in the spatial world

Open to the east?



Kenex
Creating opportunities in the spatial world

THRC096 – eastern boundary



Kenex
Creating opportunities in the spatial world

Conclusions

- Downhole logging (OTV) will add valuable data to any drill programme, especially structural data to RC programmes to can guide exploration drill planning.
- Structural logging of Tampia RC data indicates a synclinal structure similar to past mapping – but turned 90° degrees.
- Faults may be possible, but may be fewer, along trend and not as severe as suggested by previous work.
- The new drilling and updated structural model extend the mineralisation to the south and leave the potential for mineralisation open to the east.

Kenex
Creating opportunities in the spatial world