"SEISMIC DATA PROCESSING EXPLAINED"
Jason Noble – Headwaters Seismic

Geophysical Processing 1 – dealing with data and assigning geometry / CDP Binning April 14, 2020
In this session Jason Noble (Headwaters Seismic Processing) will discuss the data required for processing as well as how that data is used to generate a version with field geometry assigned to data headers. Thanks to Sigma Exploration for providing their proprietary datasets for the purpose of these sessions.

Geophysical Processing 2 – discussion on refraction statics and elevation April 17, 2020
In this session Jason Noble (Headwaters Seismic Processing) discusses what we are attempting to resolve with refraction statics, how they differ from the elevation correction and how we calculate them. Thanks to Sigma Exploration for providing their proprietary datasets for the purpose of these sessions.

Geophysical Processing 3 - what is deconvolution and why do we use it, what does it do to the data April 21, 2020
In this session Jason Noble (Headwaters Seismic Processing) discusses deconvolution. What is recorded as seismic data is the original source wavelet convolved with the earth response. The objective of deconvolution is to try to obtain a better representation of the actual earth response. That is, we want to somehow remove the contaminating effects of what we have done to try and image the subsurface. Thanks to Sigma Exploration for providing their proprietary datasets for the purpose of these sessions.

Geophysical Processing 4 - Noise Attenuation April 24, 2020
In this session Jason Noble (Headwaters Seismic Processing) discusses the many different types of seismic data noise. We will look at coherent and random noise and why we want to try and remove it without damaging the underlying signal. Thanks to Sigma Exploration for providing their proprietary datasets for the purpose of these sessions.

Geophysical Processing 5 - Spectral balance April 29, 2020
In this session Jason Noble (Headwaters Seismic Processing) discusses spectral balancing. Improving the frequency content of the data can be a good thing, but what does it mean when we use spectral balance or spectral whitening. Thanks to Sigma Exploration for providing their proprietary datasets for the purpose of these sessions.

Geophysical Processing 6 - Velocity analysis May 1, 2020
In this session Jason Noble (Headwaters Seismic Processing) discusses velocities. Everyone has heard of "picking velocities" as a good excuse for the

processing to be behind schedule, but is that reasonable? We will look at the what and the why of velocity analysis. Thanks to Sigma Exploration for providing their proprietary datasets for the purpose of these sessions.

Geophysical Processing 7 - Residual Statics May 5, 2020
In this session Jason Noble (Headwaters Seismic Processing) discusses residual statics. Even after refraction static analysis there can be "leftover" statics in the data, possibly station to station or over a longer spatial distance. Residual statics can be calculated to correct for, or at least try to correct for this. Thanks to Sigma Exploration for providing their proprietary datasets for the purpose of these sessions.

Geophysical Processing 8- 2D line ties May 8, 2020
In this session Jason Noble (Headwaters Seismic Processing) discusses line ties. We will show how we make a set of processed seismic data fit together, and why they may not fit together without manual adjustment even when they have all been processed or reprocessed at the same time. Thanks to Sigma Exploration for providing their proprietary datasets for the purpose of these sessions.

Geophysical Processing 9 - Migration May 12, 2020
In this session Jason Noble (Headwaters Seismic Processing) discusses why we apply migration to data and what is a post stack migration. Thanks to Sigma Exploration for providing their proprietary datasets for the purpose of these sessions.

Geophysical Processing 10 - Multiple attenuation May 15, 2020
In this session Jason Noble (Headwaters Seismic Processing) discusses multiple attenuation. What are multiples and how do we remove them from the data. What differences does it cause to the gathers or stack? Thanks to Sigma Exploration for providing their proprietary datasets for the purpose of these sessions.

Geophysical Processing 11 - 3D merge May 19, 2020
In this session Jason Noble (Headwaters Seismic Processing) discusses the process involved in merging 3D volumes – what benefits and disadvantages does it have. Thanks to Sigma Exploration for providing their proprietary datasets for the purpose of these sessions.

Geophysical Processing 12 - AVO compliance May 22, 2020
In this session Jason Noble (Headwaters Seismic Processing) discusses AVO. What does it mean when data is AVO compliant, and how is that any different from "normal"? A brief discussion on AVO compliance and how it complicates

the processing runstream. Thanks to Sigma Exploration for providing their proprietary datasets for the purpose of these sessions.

Geophysical Processing 13 - Filter and scale May 26, 2020
In this session Jason Noble (Headwaters Seismic Processing) discusses why we apply filters and scalars to the data and what do they do to the section. Thanks to Sigma Exploration for providing their proprietary datasets for the purpose of these sessions.

Geophysical Processing 14- 5D Regularization June 2, 2020
In this session Jason Noble (Headwaters Seismic Processing) discusses 5D regularization. What is the purpose of running 5D interpolation or regularization on 3D data? Does the computational cost justify the results? Thanks to Sigma Exploration for providing their proprietary datasets for the purpose of these sessions.

Geophysical Processing 15 - Prestack time migration June 5, 2020
In this session Jason Noble (Headwaters Seismic Processing) discusses prestack time migration. Why is it "better" than post stack migration, and why is it so much more time consuming? Why are the migrated gathers not the same size as the field data? Thanks to Sigma Exploration for providing their proprietary datasets for the purpose of these sessions.

Geophysical Processing 16 - Depth migration June 9, 2020
In this session Jason Noble (Headwaters Seismic Processing) discusses depth migration. Why is depth migration different than time migration? Does it produce a section in depth? Thanks to Sigma Exploration for providing their proprietary datasets for the purpose of these sessions.

Geophysical Processing 17 - SEGY – trace headers June 12, 2020
In this session Jason Noble (Headwaters Seismic Processing) discusses SEGY. What do the SEGY file names mean and why are some of the trace headers not what they are supposed to be. Why isn't every processor sending the same SEGY format and naming structure? More of a discussion than a presentation probably. Thanks to Sigma Exploration for providing their proprietary datasets for the purpose of these sessions.