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# Elf North Sea 3-D dataset

*Louis Vaillant*[1]

**ABSTRACT**

Data recorded in the North Sea (block L7d).

## L7D DATA FILES

**Raw Data** The full dataset is as big as 45Gb, avaible on DLT tapes.
**Common-azimuth Data** To be done.
**Velocity Model** /data_3d/elf_north_sea/L7d-vel.H
Velocity model created by Elf & IFP[2] (Project "Helios") using the so-called "SMART" method (Sequential Migration Aided Reflection Tomography). The structure of the salt dome is highly 3-D, with serious illumination problems under its edges (figure 1).
**Stack** /data_3d/elf_north_sea/L7d-near-nmo-stack-fine.H
Near-offset (0-1000m) NMO-stack
**Zero-offset Migration** /data_3d/elf_north_sea/comaz_zo_salt_fine.h
**Prestack 2-D line**
**Usage** none (yet).
**Geometry** Acquisition: 2 sources, *x* streamers (most likely 3).

```
In3d:
-----------------------------------------
********** L7d_all.H ************
4 -esize Synched data_format=xdr_float
-----------------------------------------
n1=1500 o1=0.000000 d1=0.004000 label1=time
n2=7411523 o2=1.000000 d2=1.000000 label2=trace number
Data:  in=/scrsa3/louis/Elf/Data/L7d_all.H@
7411523 elements, 44469138000 bytes in data file
-----------------------------------------


Attr3dhead:
```

[1]**email:** louis@sep.stanford.edu
[2]Institut Francais du Pétrole

| key | min | max | mean | nzero | rms | norm |
|---|---|---|---|---|---|---|
| cdp | 2900.0000 | 3900.0000 | 3389.9319 | 7411523 | 3400.5400 | 9257668.44 |
| offset | 186.0000 | 3571.0000 | 1764.1710 | 7411523 | 1989.4291 | 5416044.20 |
| ncdp_s | 2773.4941 | 3926.8994 | 3438.5354 | 7411523 | 3449.2773 | 9390351.31 |
| nligne_s | 1346.6554 | 1520.4437 | 1428.9248 | 7411523 | 1429.5942 | 3891943.38 |
| ncdp_g | 2772.9077 | 4026.9609 | 3341.0813 | 7411523 | 3352.4868 | 9126847.67 |
| nligne_g | 1347.1848 | 1528.9202 | 1429.6726 | 7411523 | 1430.3911 | 3894112.88 |
| s_x | -1686.7405 | 13691.9580 | 7180.4541 | 7411523 | 8044.3945 | 21900150.11 |
| s_y | 1416.3849 | 5761.0933 | 3473.1201 | 7411523 | 3641.2247 | 9912910.97 |
| g_x | -1694.5596 | 15026.1074 | 5881.0698 | 7411522 | 6939.6676 | 18892629.00 |
| g_y | 1429.6204 | 5973.0039 | 3491.8162 | 7411523 | 3671.1157 | 9994286.74 |
| nline | 1354.4266 | 1515.5315 | 1429.2987 | 7411523 | 1429.9876 | 3893014.44 |
| aoffset | 185.6369 | 3571.9861 | 1764.5095 | 7411523 | 1989.8103 | 5417081.89 |
| azimuth | -1.2745 | 1.5323 | -0.0261 | 7411431 | 0.1345 | 366.08 |
| cmp_x | -8.3235 | 13338.0527 | 6530.7617 | 7411522 | 7446.8040 | 20273262.93 |
| cmp_y | 1610.6659 | 5638.2871 | 3482.4683 | 7411523 | 3654.9572 | 9950296.70 |
| offset_x | -3463.4939 | 3383.3154 | -1299.3843 | 7411523 | 1980.6512 | 5392147.21 |
| offset_y | -990.2041 | 786.0776 | 18.6959 | 7411431 | 190.6978 | 519157.71 |

**Problem** Multipathing - Illumination problems / Shadow zones - Common-angle gathers

**History of Data** Dataset given to SEP in 1998, originaly for testing AMO and common-azimuth migration. The contact at Elf Exploration Production is Henri Calandra[3].

**Preprocessing** A correction of amplitude has been applied: geometrical spreading

$$A(t) = \left(\frac{t}{250}\right)^{+1.8}$$

Also, the multiples due to sea bottom have already been removed.

**Proprietary Considerations** The L7d data are free to be used by SEP only, including publications in articles or SEP reports with the usual acknowledgements to Elf Aquitaine.

## REFERENCES

[3]**email:** henri.calandra@elf-p.fr

Figure 1: Elf "SMART" velocity model elf-L7d-vel-model [ER]

Figure 2: NMO-stack of the near offsets (0-1000m) elf-L7d-nmo-stack [ER]

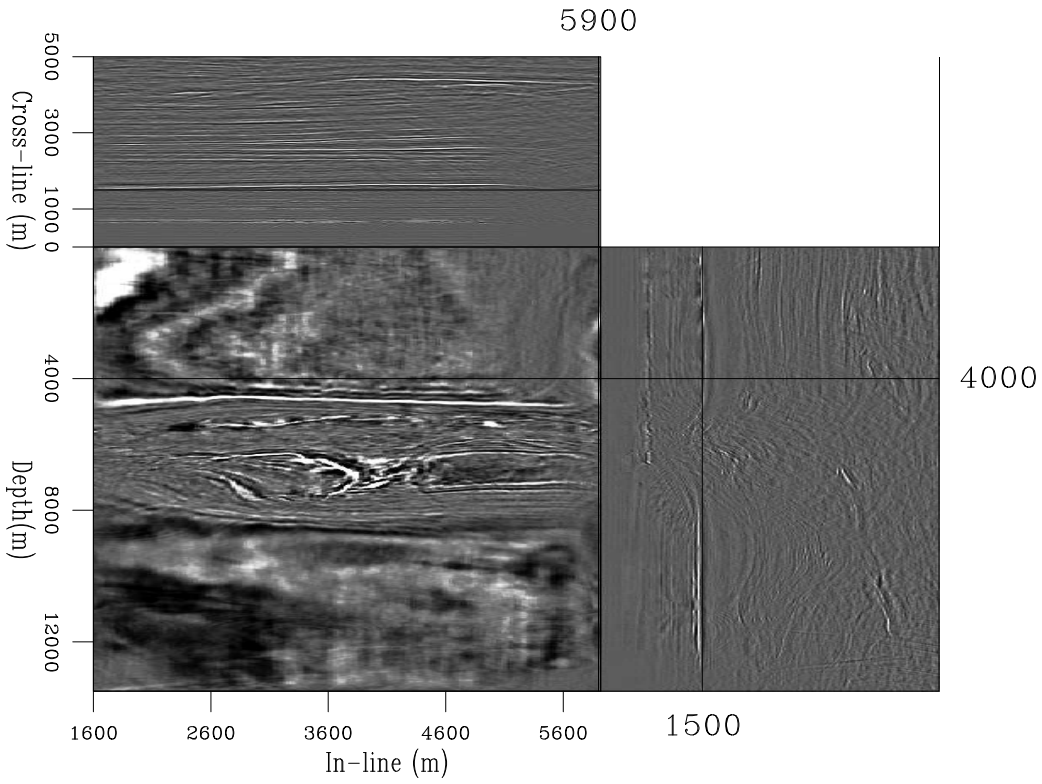


Figure 3: Zero-offset migration of the near offsets (0-1000m) elf-L7d-zo-mig [ER]

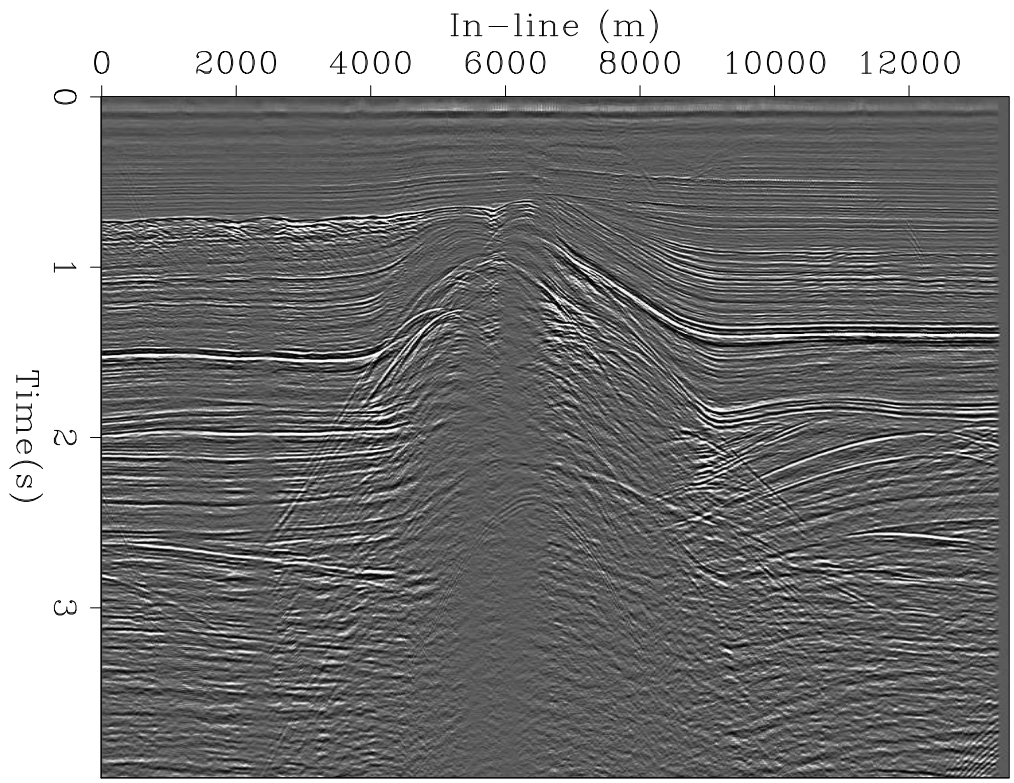


Figure 4: NMO-stack of the near offsets (0-1000m), section corresponding to the 2-D synthetic data elf-L7d-2D-line-nmo-stack [ER]

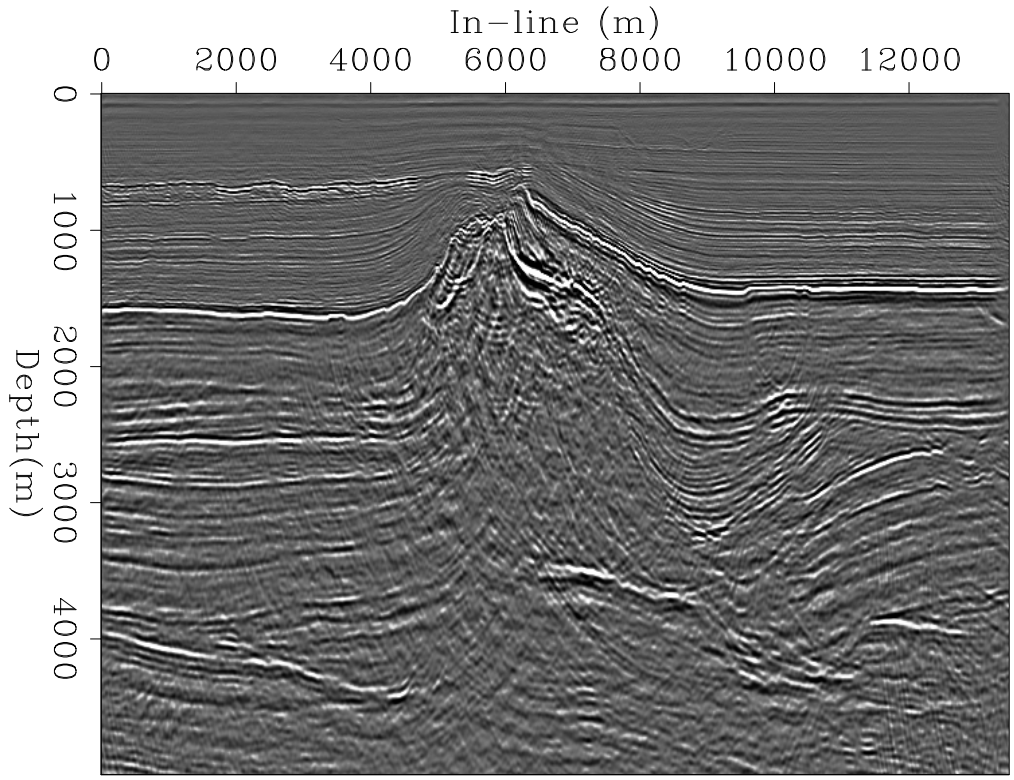


Figure 5: Zero-offset migration of the near offsets (0-1000m), section corresponding to the 2-D synthetic data elf-L7d-2D-line-zo-mig [ER]