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## RESEARCH REPORT

Accreditation certificate: № SNC MD CNOO 41 0184 from 6 January 2004.

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PRODUCT NAME	Crude Oil
SAMPLE NAMES	SGS 0001224 LF7 (0,5 l) SGS 0001242 MF5 ( 1,0 kg) SGS 18066 HF1 (0,1 kg) SGS 188678 (0,5 kg)

PRODUCT ACCEPTANCE	22 April 2007
START OF INVESTIGATION	22 April 2007
END OF INVESTIGATION	4 May 2007

### AIM OF INVESTIGATION

1. Determination and identification of compounds in crude oil samples.
2. Determination of PAHs and dioxin concentration in sample SGS 0001224 LF7
3. Determination of properties and element content of ash sample SGS 188678

*Results cover only presented samples.*

### Results

1. Chromatograms of presented samples were made by GC/MS system 6890/5973 of Agilent technology Inc. The identification of crude compounds was effectuated by ChemStation soft.
2. Results are presented in annex file.
3. Conclusion is that three samples are different by the hydrocarbon compounds content. Light fraction LF7 is different in the comparison with middle fraction MF5 in the field of light compounds. Chromatograms of LF7 and MF5 are different to the retention time of 8,5 min and very similar after this retention time.
4. Presented samples have a high level of poly aromatic compounds.
5. 16 Poly Aromatic Hydrocarbons and one Dioxin ( 1,3,7,8-Tetrachlorodibenzo-p-dioxin) were determined.

**Table 1 PAHs and dioxin concentration in sample of Crude Oil SGS 0001224 LF7.**

#	Compounds name	CAS number	Concentration mg/L
1	Naphthalene	91-20-3	710.83
2	Acenaphthylene	208-96-8	284.57
3	Acenaphthene	83-32-9	38.45
4	Fluorene	86-73-7	73.47
5	Phenanthrene	85-01-8	204.80
6	Anthracene	120-12-7	57.79
7	Fluoranthene	206-44-0	55.71
8	Pyrene	129-00-00	70.88
9	Crysene	218-01-9	10.55
10	Benz[a]anthracene	56-55-3	11.06
11	Benz[b]fluoranthene	205-99-2	4.45
12	Benz[k]fluoranthene	207-08-9	7.71
13	Benz[a]pyrene	50-32-8	10.26
14	Benz[ghi]perylene	191-24-2	3.43
15	Dibenz[ah]anthracene	53-70-3	< 0.50
16	Indeno[1,2,3-cd]pyrene	193-39-5	3.66
17	1,3,7,8-Tetrachlorodibenzo-p-dioxin	50585-46-1	< 0.50

**Table 2 The properties and heavy metal content in ash sample SGS 188678.**

#	Type of property and determined elements	Unit	Obtained results
1	Humidity (105 <sup>0</sup> C)	%	2,16
2	Ash content, 500 <sup>0</sup> C	%	23,6
3	Ash content, 900 <sup>0</sup> C	%	68,0
4	Weight density	g/cm <sup>3</sup>	0,52
5	Carbon	%	50,6
6	Hydrogen	%	2,85
7	Nitrogen	%	0,85
8	Cadmium	mg/kg	1,46
9	Zinc	mg/kg	4200,0
10	Nickel	mg/kg	56,0
11	Copper	mg/kg	86,0
12	Lead	mg/kg	21,6
13	Manganese	mg/kg	44,0

Head of the Laboratory,



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