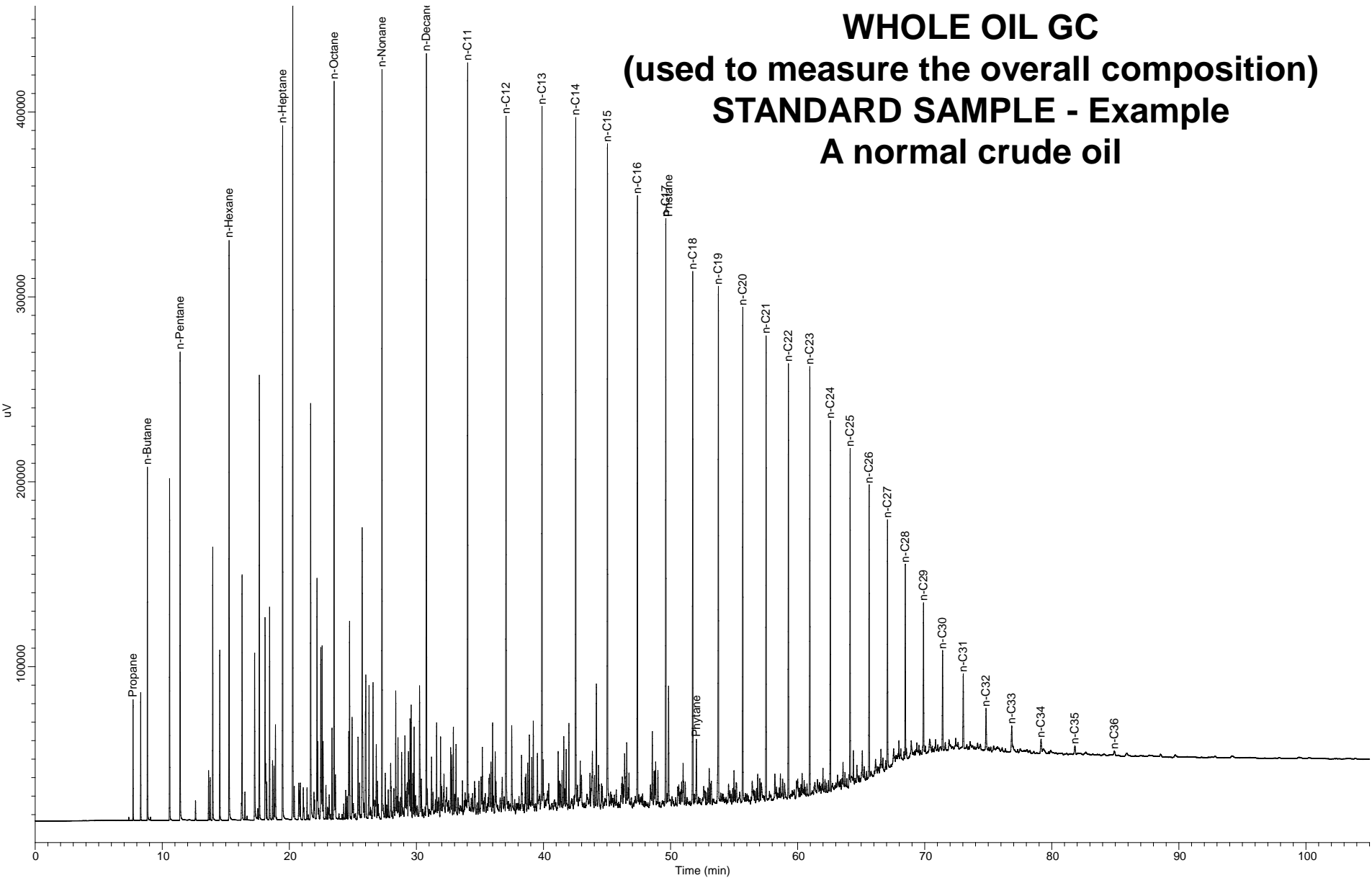


Summary – 29/Mar/12
XMILE Enzyme Treatment
of Viscous Crude Oil

Summary

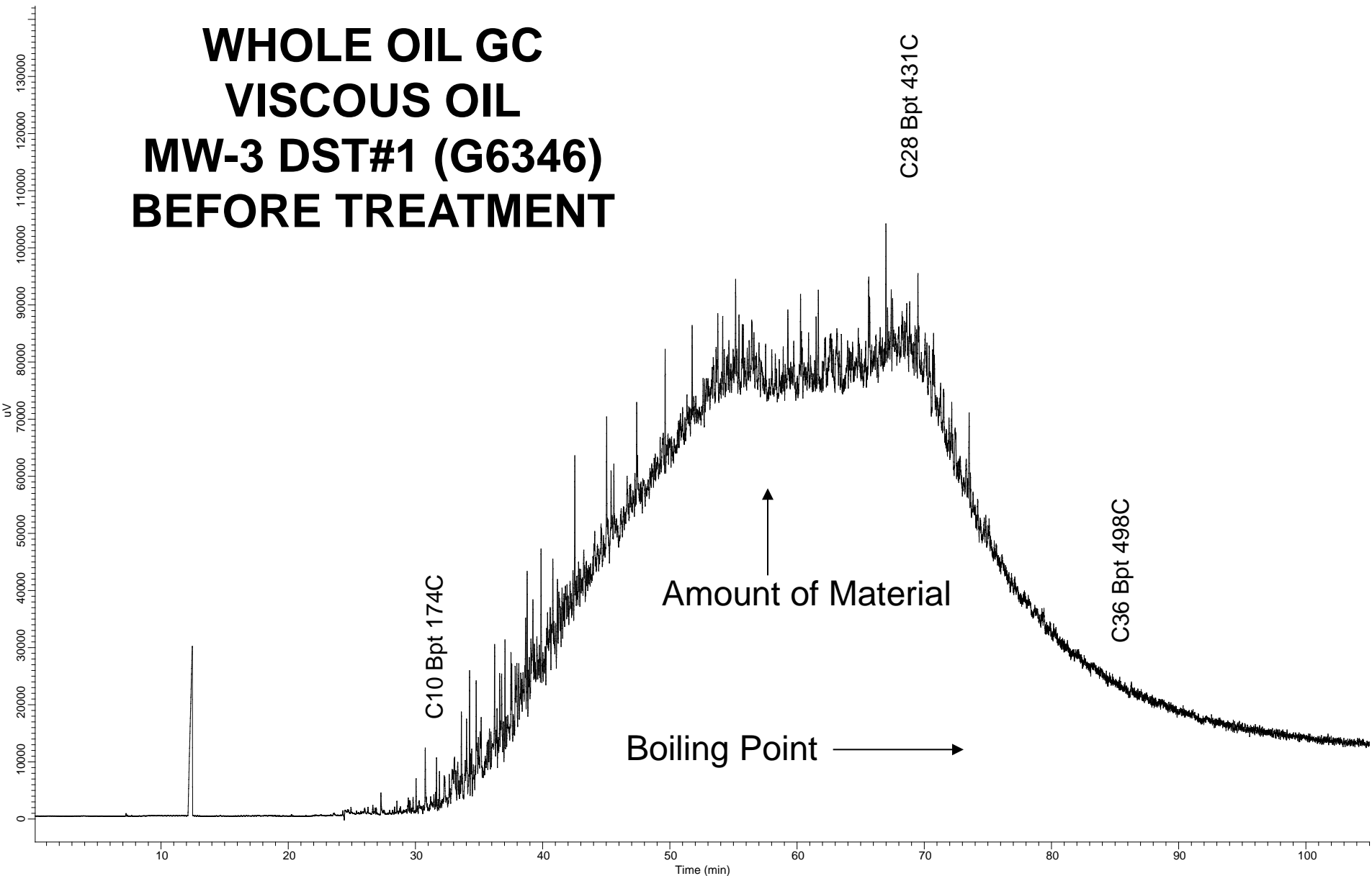
- A problematic viscous crude oil emulsion was treated with an XMILE Enzyme product to improve its nature.
- Samples were tested for several properties:
 - Initially
 - After Enzyme treatment for 48 hrs
- 2nd sample was used to look at water content after
 - Initially
 - after 48hrs
 - after 2nd treatment of 48hrs

WHOLE OIL GC (used to measure the overall composition) STANDARD SAMPLE - Example A normal crude oil

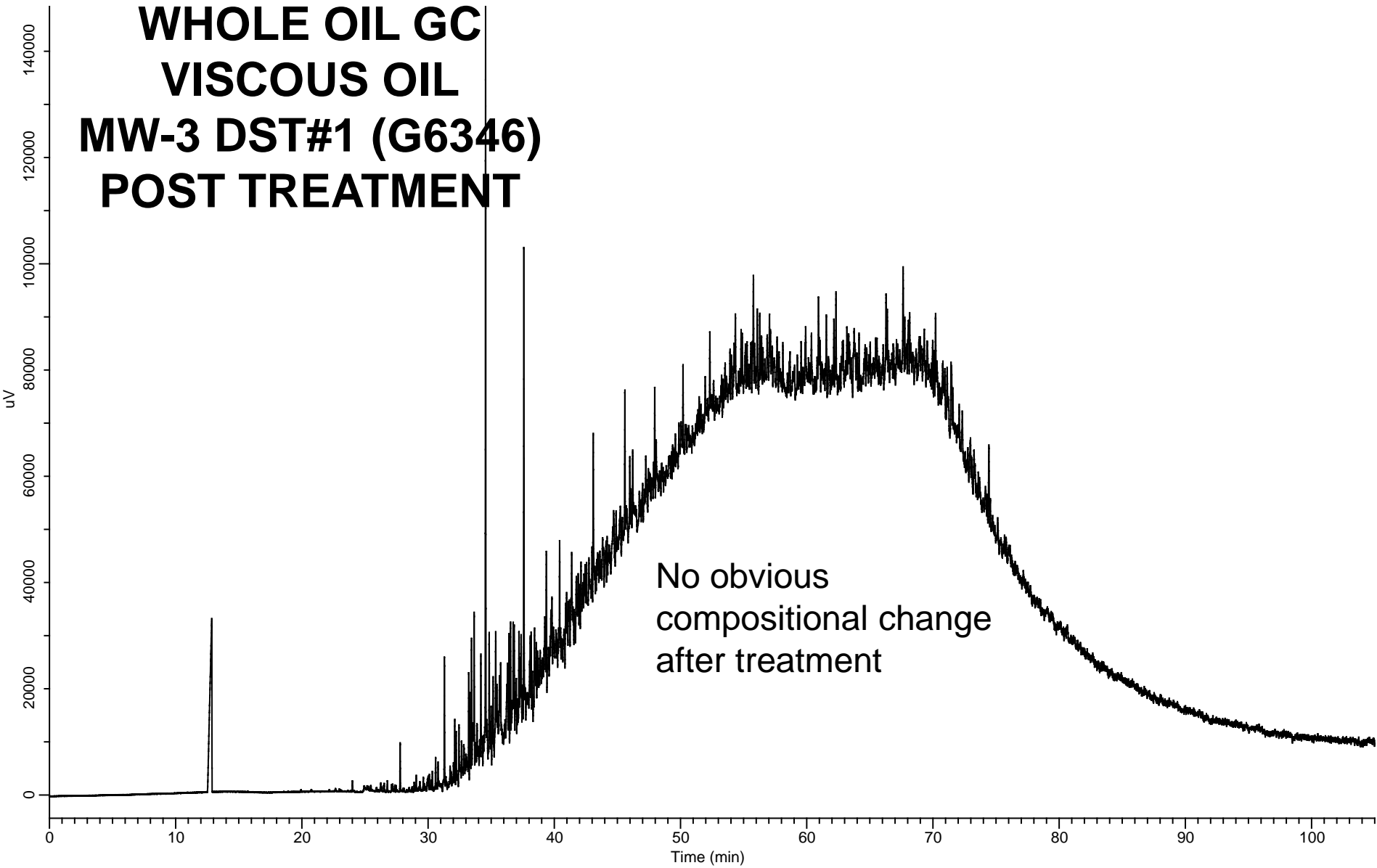


File Name: wogcstd100a-20120118-161904.cdf
Sample Name: STD WOGC Sample ID: 1 Operator: sun.geochem
Injection Volume: 1.00 Sample Amount: 1.000000

WHOLE OIL GC VISCIOUS OIL MW-3 DST#1 (G6346) BEFORE TREATMENT



**WHOLE OIL GC
VISCOUS OIL
MW-3 DST#1 (G6346)
POST TREATMENT**



File Name: wogc010.cdf

Sample Name: 1201OIL006S010 Miran West-3 ENZYME G634 Sample ID: 6 Operator: sun.geochem

Injection Volume: 1.00 Sample Amount: 1.000000

Results

	Sample Number		GEO-213841	GEO-216373		GEO-216753	GEO-216754	GEO-216755
	Sample Name		G6346	G6346+ENZYME		G6375	G6375E1	G6375E2
	Description		MIRAN WEST-3 DST#1 SAMP7 OIL	MIRAN WEST-3 + ENZYME		MW3 DST1 OIL EMULSION SURGE TANK SAMPLE#14.08	MW3 DST1 OIL EMULSION SURGE TANK SAMPLE#14.08 + ENZYME TREATMENT	MW3 DST1 OIL EMULSION SURGE TANK SAMPLE#14.08 + ENZYME TREATMENT X 2
Auto Pour	Automatic Pour Point	°C	-24	-24				
Total Acidity	BP 408 Acidity	mg KOH/g	6.8	6.85				
D95	D95 Water Content	% vol	46.65			27.6	32	23.6
IP143	IP143 Crude Oil Asphaltene NOT ACCRED	% mass	0.15	0.35				
IP 365	IP 365 Density at 15 Deg C	kg/l	0.978	0.9754				
KV @20C (manual)	KV at 20 Deg C	cSt						
IP71 RF @ 20C	KV at 20 Deg C	cSt	2341	2196				
UOP 163	H2S content	mg/kg	<5					
	Mercaptan content	mg/kg	374					
NICKEL CONTENT	Concentration of Nickel	mg/kg	2	3				
Sulphur Content	Concentration of Sulphur	% wt/wt	1.62	1.65				
VANADIUM CONTENT	Concentration of Vanadium	mg/kg	5	3				

48 Hr treatment with the Xmile Enzyme did appear to measurably affect the physical properties of the oil emulsion i.e. Density, acidity, pour point etc.

The treated oil was perhaps slightly more mobile

Water content on 2nd sample was perhaps slightly lower after 2nd treatment
Difficult to measure in emulsion

Observations

We did notice some apparent improvement in mobility of the oil after treatment.

Prior to treatment it was not possible to separate the emulsion by centrifugation.

After treatment it was possible to achieve a split.

**CENTRIFUGING
BEFORE XMLE ENZYME
ADDED**



**CENTRIFUGING
AFTER XMILE ENZYME
ADDED**

**N.B. OIL LAYER
REMOVED**

