ONBOARD OIL RECYCLING

BYPASS FILTRATION





The Drake Well was 69.5-footdeep and took 4 months to drill. Cost \$3000

The problem was there was no demand for oil in 1869. Drake went broke.

PERMAN

NOW BEING CALLED

THE PERMANENT BASIN

This sedimentary basin is located in western Texas and southeastern New Mexico.



New Mexico accounts for more than 11 percent of total U.S. crude oil production.

PERMIAN #1 IN THE WORLD.

TEXAS #1 IN U.S.

NEW MEXICO IS #2 IN PRODUCTION.

OIL AND GAS NOW ACCOUNT FOR 50% OF NM TAX **REVENUES.**

FRACKING **EXPLODES THE ACCESS TO THE** SHALE RESERVES

(BUT)

ENVIRONMENTAL PROBLEMS:

WATER (LOTS !)

FLARING

METHANE



Access Road Water Supply Pipeline Medic Vehicle

Flowback Storage Tanks Water Storage Tanks Chemical Storage Truck

Wellhead

Frac Pumper

Separator

Frac Sand Conveyor Command Centre (Data Monitoring Van)

Blender

Fuel Truck

Frac Sand



Coal, Oil, and Natural Gas Will Remain Indispensable



HOW MUCH LUBRICANT **OIL IS RECYCLED IN NM**?

I COULDN'T FIND THAT STATISTIC ?

MOST USED LUBRICANT OIL IS RECYCLED.

RE-REFINED (HALF COST)

BUNKER FUEL

MOULD RELEASE

ON-BOARD OIL RECYCLING !

REDUCE THE AMOUNT OF USED LUBRICANTS.

Motor and Hydraulic oil

- Lubricates
 Cools
- 3. Seals piston ring and seals.
- 4. Suspends wear and soot particles

Acting by itself, oil would soon become saturated with contaminants. That's why we have filters.

Prior to 1943, most oil filters were the "by-pass" variety, only filtering about **10 percent of the** oil at a time.

The first "full-flow" oil filter to filter 100% of the motor oil, was introduced in 1943 and became standard on mass production vehicles by 1946.





OBSOLESCENCE !

It became a reality during the 1950's !

Sell more cars !

Sell more oil !

Full-flow filters have approximately 100 quarts of oil passing through the filter media each minute. The fluid passes through so quickly that it cannot be finely filtered.

While the film of oil between moving parts is generally about 3 microns, regular oil filters only filter down to between 25 and 40 microns.





We have been taught that regular oil drains and filter changes are required to protect our engines and **hydraulic** systems.

Oil Does Not Wear Out!

- Mobil Oil Technical Bulletin #863
- "Oil does not wear out, breakdown or deteriorate to such an extent that it needs to be changed.
- It becomes contaminated with water, acids, soot and sludge. The engine's oil filter can only remove large particles. It cannot remove water, acids, soot or sludge all of which pass through the filter just as readily as the oil.

Standard Oil of New York; "Many times the question has been asked 'Does **lubricating oil wear** out ?' The question should be answered in the negative".
BY-PASS OIL FILTERS

By-pass oil filters act separately from an engine's fullflow filter and only filter a small portion of the oil at a time, subjecting it to additional and more thorough cleaning than the full-flow filter.

Eliminate Water

As engine components heat and cool, water will become present in your engine. Combustion gasses contain sulfur.

Water and sulfur dioxide create sulfuric acid.

Some bypass filters remove water.

≈Removes Dirt and Contaminants

Dirt and wear metals will always be present. Change oil to get rid of particles and dirt.

Wear is caused by particles around 3 to 15 microns in size, yet conventional engine oil filters only filter out particles down to approximately 25 microns. **Bypass filters will** filter out particles down to 1 micron, thereby reducing the number of engine failures and rebuilds.



Preserves Additives

Dispersants, detergents, oxidation and rust inhibitors, pour-point depressants, metal de-activators, and antifoaming and gelling agents, are purposely placed in **lubrication oil to enhance its** performance.

The bypass system removes dirt, contaminants, wear particles, and water, it does not remove these necessary and useful additives.

«Extends Drain Intervals

- Oil filtered through a bypass system can be run longer without any risk whatsoever to the engine. Oil analysis will indicate the oil's life span.
- **Expect bypass filtration to at least double the oil life.**
- Large sumps up to 10 times.

Reduces Time Needed for Service

Changing the bypass filter element requires 15 minutes.

Taking an oil sample takes less than five







ALL FLEETS SHOULD HAVE AN OIL ANALYSIS PROGRAM !!

ESPECIALLY

HYDRAULICS

WHY?

TOP FIVE BENEFITS

1. DETAILED BREAKDOWN OF LUBRICANT PERFORMANCE

This overview can pinpoint problem areas based on contaminant type and indicate what problems may arise from the contamination.

2. FIND PROBLEMS BEFORE THEY OCCUR

Knowing a problem ahead of time can save time and money. With consistent oil testing, small issues can be and dealt with before they become big problems.

3. FEWER REPAIRS AND LESS DOWN TIME

Little issues become big problems. Larger problems require extensive repairs and cause downtime. **Downtime = \$\$\$ loss.**

4. LONGER LASTING EQUIPMENT

Regular checkups and maintenance greatly increase the useful life of your equipment

5. COST SAVINGS

Oil analysis can help your machinery run smoothly and your business stay strong.



: 2006 FORD

it Make

03-30027 - Diesel Engine

it Model	: F 250	Serial No : {	n/a}	\mathbf{D}_{i}	ate Rec'd	:Dec	: 5, 2006			
mp Make	: 6.0L	Cust. Ref No. 🛛 : {	n/a}	Sa	imple Dat	e :No	v 21, 2006			
mp Model	: {n/a}	Stub No. : H	CL-M089887	Diagnostician : Doug Bogart						
ECOMM	ENDATION	Sample Date	03/07/06	06/21/06	08/28/06	Current	UOM			
comple at the part carries internal to monitor			Time on Unit	30489	38123	43437	51717	mls		
sample at the	e next service interval	Time on Oil	5721	7634	12948	21228	mls			
			Time on Fltr	5721	5004	4246	0	mls		
			Oil Maint.	not chg	not chg	not chg	not chg			
			Filter Maint.	changed	changed	not chg	changed			
ONTAMI	NATION		Sample Date	03/07/06	06/21/06	08/28/06	Current	Abn		
ia no indi	action of our contomi	Silicon	10	15	16	19				
nere is no mun ount and size	cation of any contami of narticulates prese	Fuel(%)	<2.0	<2.0	<2.0	<2.0				
nount and size of particulates present in the system is acceptable.			Glycol							
			Water (%)	<0.1	<0.1	<0.1	< 0.1			
			Soot(%)	0	0.1	0	0.1			
			>2µm	3237	8068	1416	2883			
			>5µm	1197	2984	523	1066			
			>15µm	128	319	55	113			
			>25µm	30	76	13	27			
			>50µm	2	7	1	2			
			>100µm	0	0	0	0			
			ISO 4406	17/14	19/15	16/13	17/14			



	ISO 4406	17/14	19/15	16/13	17/14	
OIL CONDITION	Sample Date	03/07/06	06/21/06	08/28/06	Current	Base
	Potassium	0.0	18	0.0	0.0	
Oil Type: 15 QTS of CHEVRON DELO 400 MULTIGRADE 15W40	Boron	105	77	55	42	
The condition of oil is suitable for further service.	Barium	0.0	0.1	0.0	0.0	
	Calcium	2963	3134	3072	3128	
	Magnesium	8.4	9.5	15	14	
	Molybdenum	214	222	213	231	
	Sodium	3.7	6.2	5.0	6.6	
	Phosphorus	1144	1159	1160	1175	
	Sulfur	4224	4341	4663	4844	
Unit 03-30027 Ford F-250	Zinc	1292	1369	1321	1346	
	Visc@100°C	13.1	13.2	13.1	13.5	14.4
Diesel Engine	TBN	10.8	7.08	7.74	6.51	
WEAR	Sample Date	03/07/06	06/21/06	08/28/06	Current	Abn
All component trees are normal	Iron	17	33	69	93	
All component wear fales are normal.	Nickel	0.4	0.5	0.9	2.1	
	Chromium	1.0	1.1	2.1	2.8	
	Titanium	0.1	0.0	0.1	0.1	
	Copper	3.2	5.5	6.3	8.4	
	Aluminum	8.7	9.3	9.9	11	
	Tin	0.0	0.0	0.0	1.2	
	Lead	0.7	1.8	3.3	4.6	
	Silver	0.0	0.0	0.0	0.0	

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Vinerrall emilieril



