



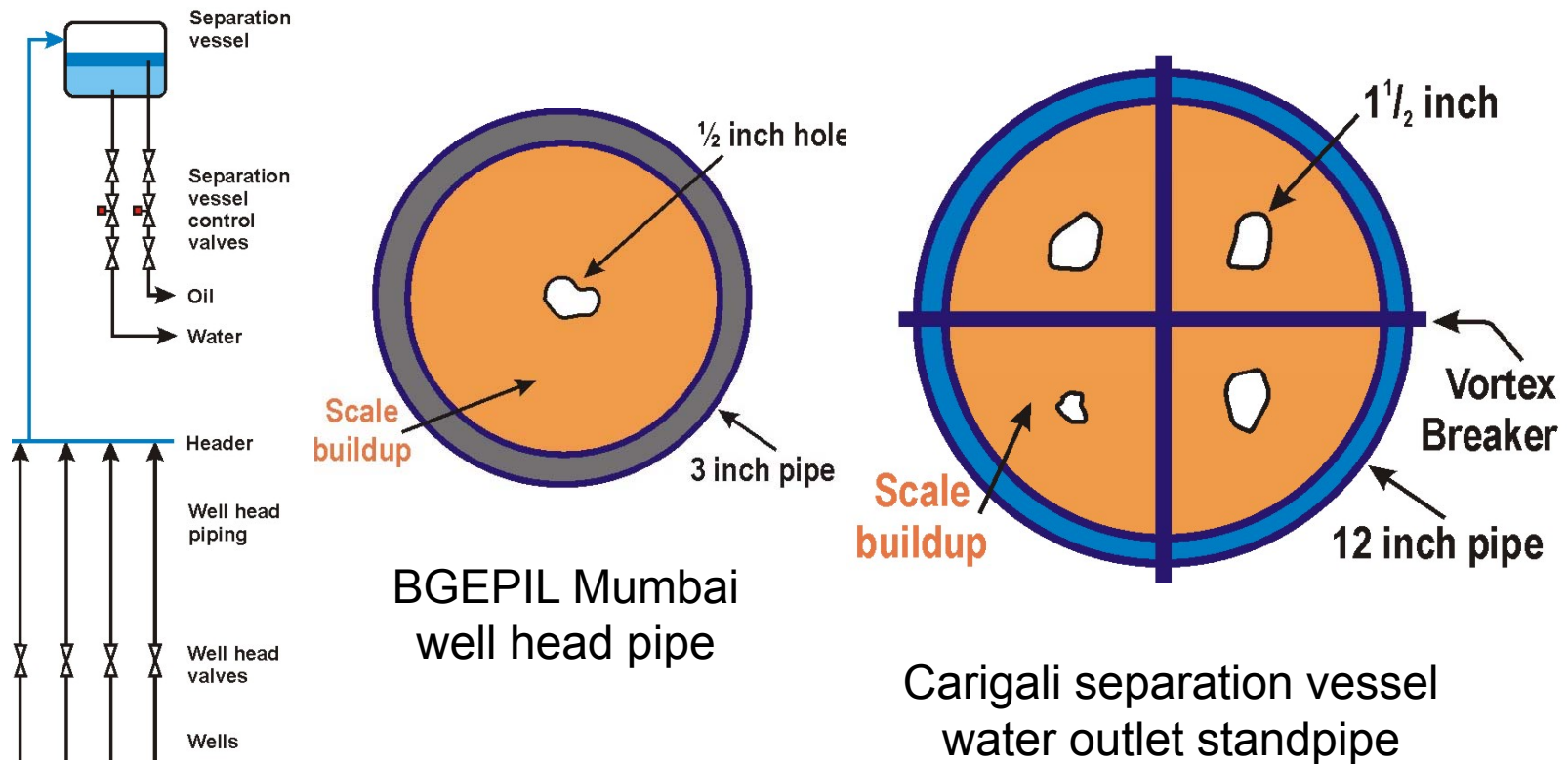
Increase production....
Reduce costs....



Scale-X[®]
Magnetic Fluid Conditioners

The Problem:

Scale buildup blocks pipes and valves, which reduces production output and drops revenue



The Conventional Treatment:

Chemical dosing. It does not eliminate scaling but is widely promoted by powerful chemical companies, well entrenched in the industry.

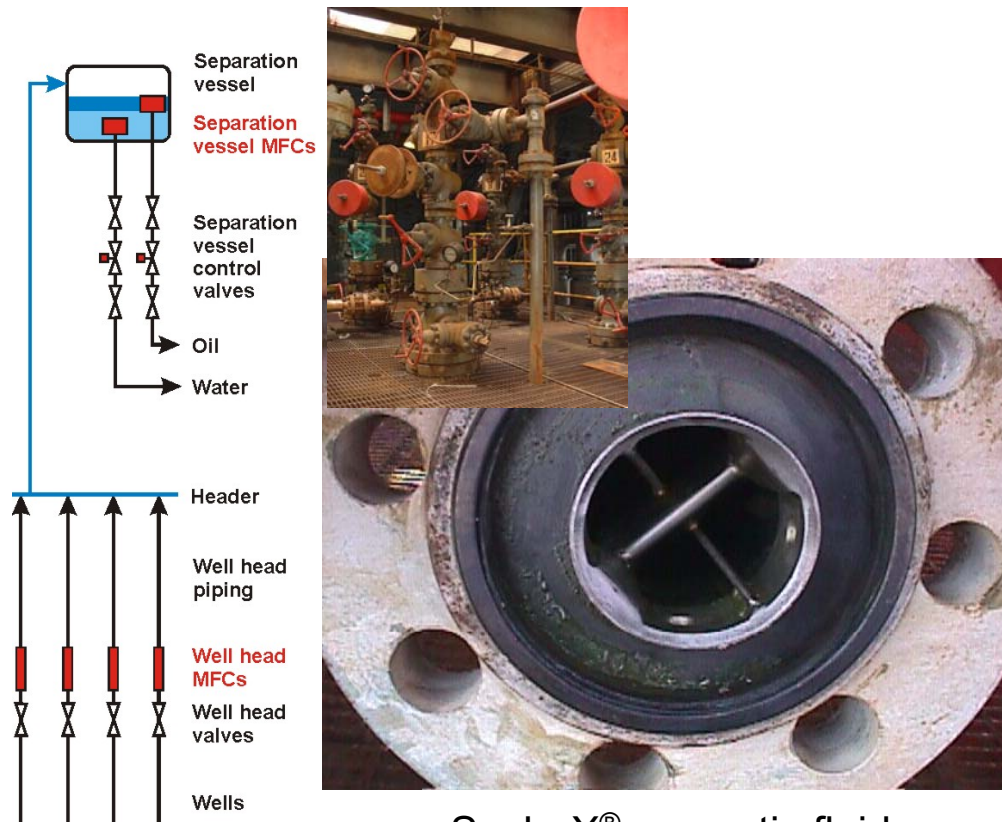
It is blatantly obvious chemicals **do not** keep a platform 100% productive. At best they are only able to slow down the rate at which scale builds up, therefore *production losses continue to accrue immediately after cleaning.*

- Chemicals are a regular ongoing expense, not a permanent solution
- They do not eliminate the need for regular cleaning / de-scaling
- They are highly toxic and hazardous to personnel
- They do not alleviate regular platform shutdowns
- Shutdown production losses are massive
- They are very detrimental to the environment
- They are expensive to store and transport



The Solution:

Scale-X[®] Magnetic Fluid Conditioners (MFCs) *eliminate* scale buildup and maintain revenue



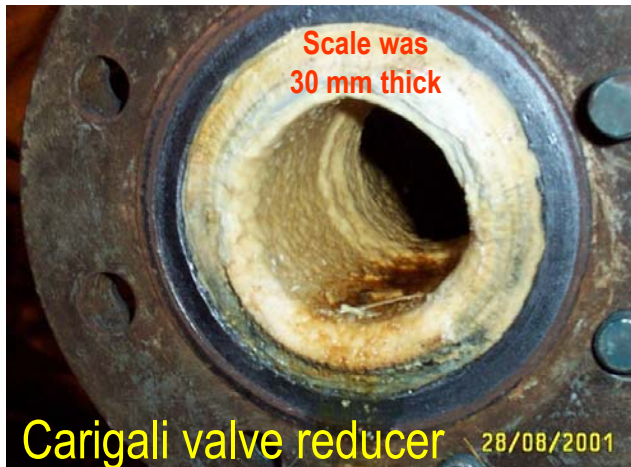
Scale-X[®] magnetic fluid conditioner installed in BGEPIIL Mumbai well head piping



Scale-X[®] magnetic fluid conditioner installed in Petronas Carigali separation vessel

The Results:

With Chemicals



With MFC



More Results:

With Chemicals

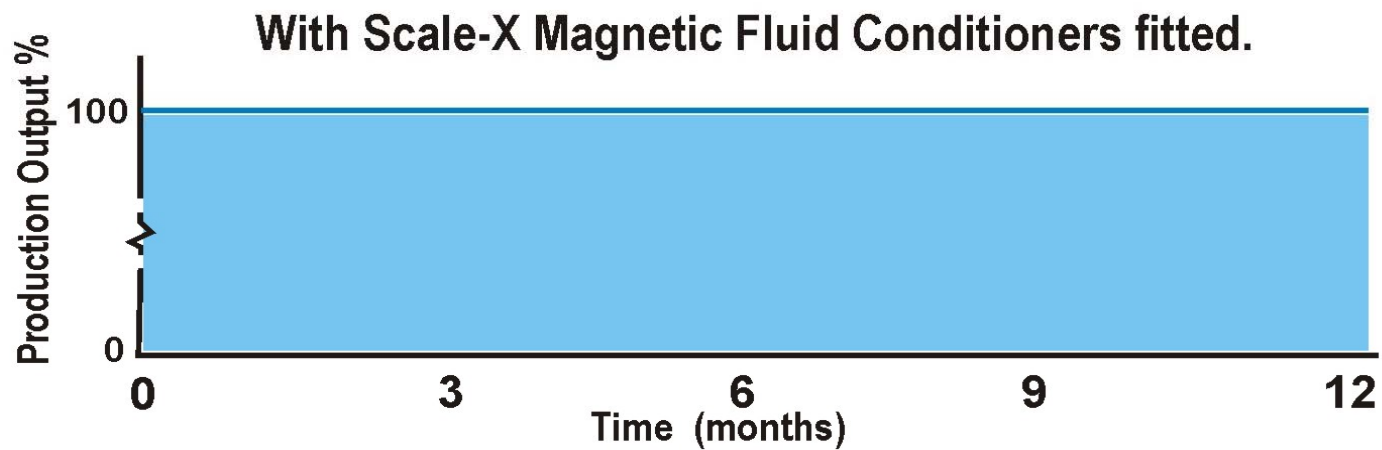
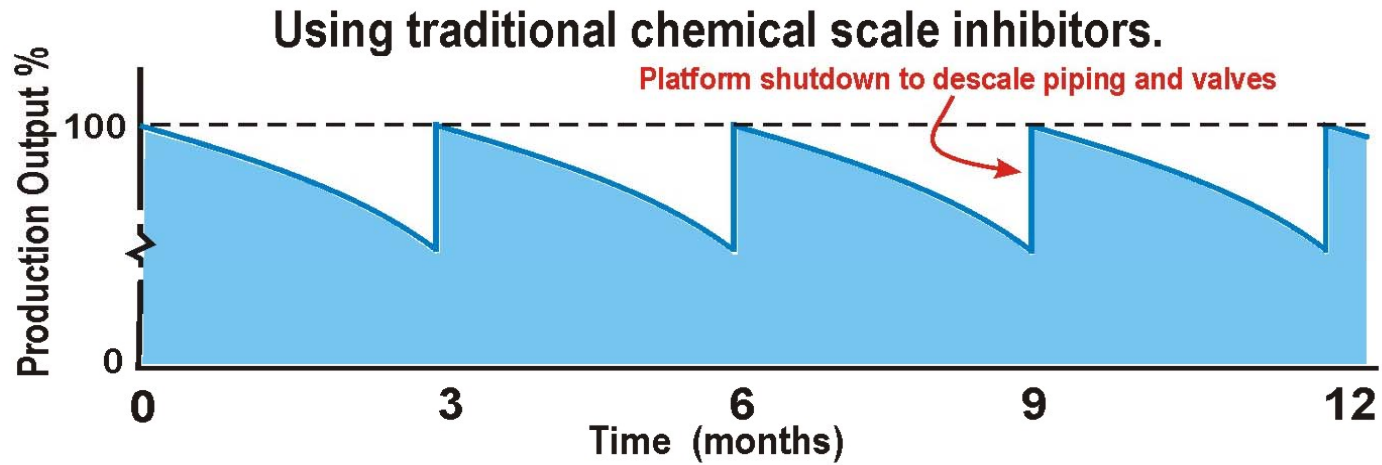


With MFC



The Benefits:

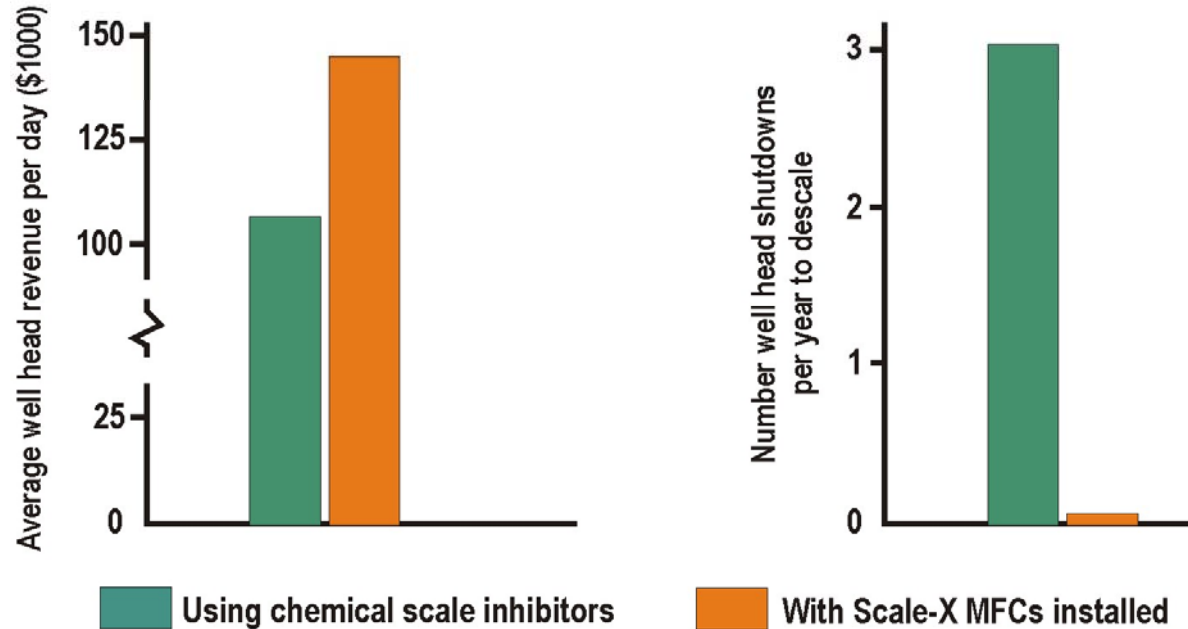
Typical oil production output characteristics



Case study 1:

BGEPIL Mumbai well head piping

In October 2004 Scale-X[®] MFCs were fitted to British Gas Exploration & Production India Ltd well heads on a platform off Mumbai. After 15 months of operation there was zero scale buildup in pipes that previously clogged 93% after 4 months service.



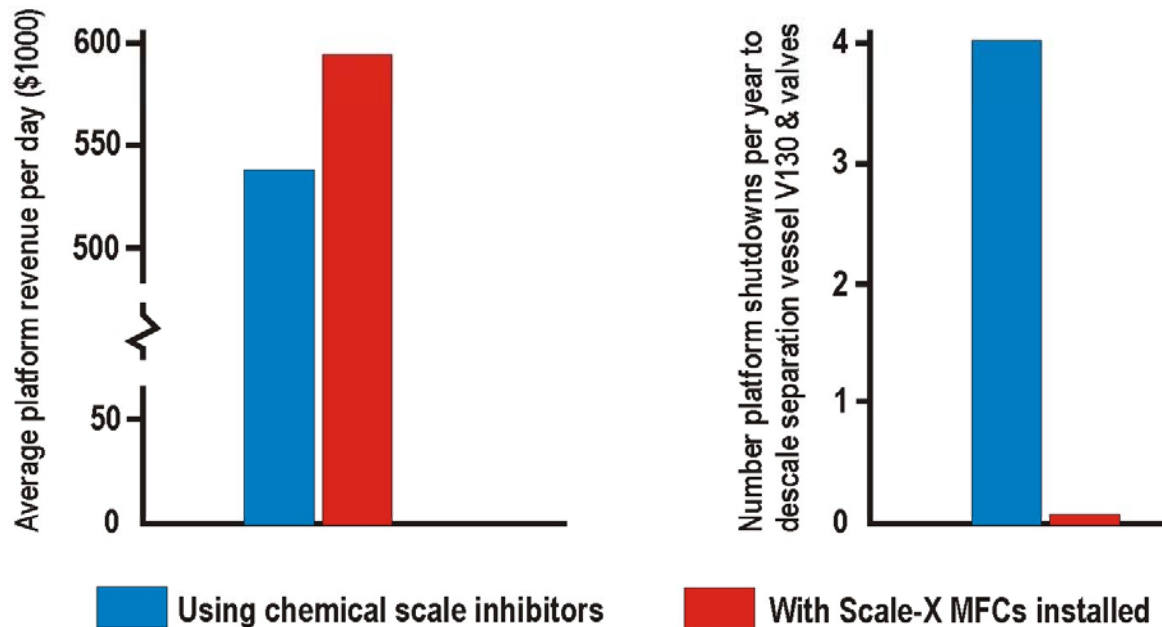
Increased revenue *per well* was approximately US\$5.6M per year

Based on information supplied by BGEPIL calculated at a nominal price of US\$90 per barrel.

Case study 2:

Petronas Carigali separation vessel & valves

In August 2001 Scale-X[®] MFCs were fitted to oil and water standpipes in V130 separation vessel on Petronas' Tinggi A platform. After 8 months of operation there was zero scale buildup in pipes that previously clogged 95% & 100% respectively after 3 months service.



Increased revenue from V130 was approximately US\$23M per year

Based on information supplied by Petronas calculated at a nominal price of US\$90 per barrel.

Comparative Advantage:

Petronas' evaluation of scale control mechanisms trialed and / or applied on Tinggi & other offshore Petronas oil fields in Malaysia			
Shell Fluid Chemistry Forum held at Miri, Sarawak, Malaysia on 7 & 8 October 2002			
Control Mechanism	Product Name	Effectiveness (scale 1 to 10)	Comments
Magnetic Fluid Conditioner	Scale-X®	10	Eliminated scale build up. Reduced calcite by 100%, barite by 100% and dolomite by 100%. Removed existing scale. Exceeded PCSB specification.
Chemical scale inhibitor	Surflo SI 2750	0	Increased scale problem - barite by 480%, calcite by 100% and dolomite by 8%.
Chemical scale inhibitor	Surflo SI 3007	1	Reduced calcite by 33%. Increased barite by 500% and dolomite by 8%.
Chemical scale inhibitor	Scaletrol-5	1	Reduced calcite by 19% and dolomite by 0.4%. Increased barite by 109%.
Chemical scale inhibitor	Techni-Hib 764	6	Reduced calcite by 63%, barite by 100% and dolomite by 14%.
Chemical scale inhibitor	Techni-Hib 767W	3	Reduced calcite by 47% and dolomite by 3% and increased barite by 103%.
Chemical scale inhibitor	Techni-Hib 7576	2	Reduced calcite by 27% and barite by 100% and increased dolomite by 7%.

Extract from a technical paper authored by:

Zulkifli Abdul Rahim – Maintenance Engineer, PM Operations, Petronas Carigali Sdn Bhd, Malaysia.

Proven Performance Petronas Carigali

Petronas Carigali Maintenance Engineer, PM Operations - *Zulkifli Abdul Rahim* reported in his paper tabled at a Shell forum that:

The Tinggi A platform “had the worst scale problem of all the PCSB platforms in Malaysia and the MFC’s were installed on the most severe scale problem on the Tinggi A platform.”

“Scale-X[®] MFC’s exceeded the PCSB specification in all categories and:

- completely stopped the scale build up in the standpipes and the control valves,
- removed pre-existing scale build up,
- showed that chemical scale inhibitors can be eliminated,
- maintained production output at 100% continuously, and
- reduced maintenance shutdowns from 4 per year to less than 1 per year.”

It is a fact that the Scale-X[®] Magnetic Fluid Conditioners fitted to the Tinggi A platform have performed perfectly for over 13 years to date with absolutely no maintenance required.

The Scale-X MFCs supplied by MTA which totally eliminated this scale problem in the oil / water separation system.

Oil outlet MFC installed on an 8 inch vessel stand pipe.

This was treating a mixture of oil and water.



Water outlet MFC installed on an 12 inch vessel stand pipe.

This was treating water only.



BGEPIL report on well head MFC

Following is an internal British Gas email correspondence of May 2005 provided to Raymond Page of Scale-X[®] in response to his request for a report on the performance of the well head MFCs fitted to the BG Mumbai platform in October 2004. Mr Ashutosh Shah from BG Mumbai is replying to Mr Geoffrey Fowler of BG UK and refers to their close instrument monitoring of one of the BG well heads fitted with a Scale-X MFC:

-----Original Message-----

From: Shah, Ashutosh

Sent: 03 May 2005 13:36

To: Fowler, Geoffrey

Cc: Spaven, Mike; Trevarthen, Jerry; Abbott, Syd; Moore, Karen

Subject: MFC for Calcium carbonate scale

Geoff,

I had a discussion with Pearl Bez, Senior Production/completion engineer about MFC that they had installed late last year.

They have very positive results so far. They had installed in one well PC-7 in October 2004 and they have seen very little scale on this well till now.

I have requested a detailed report on their experiences. They have ordered 8 more MFC to be installed on the flow lines of other wells having CaCO₃ scale problem.

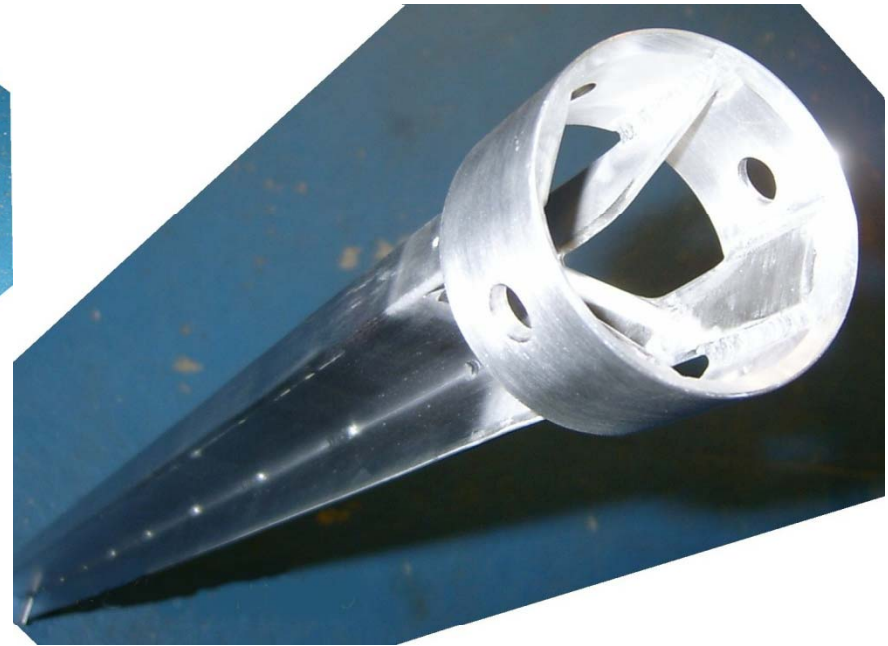
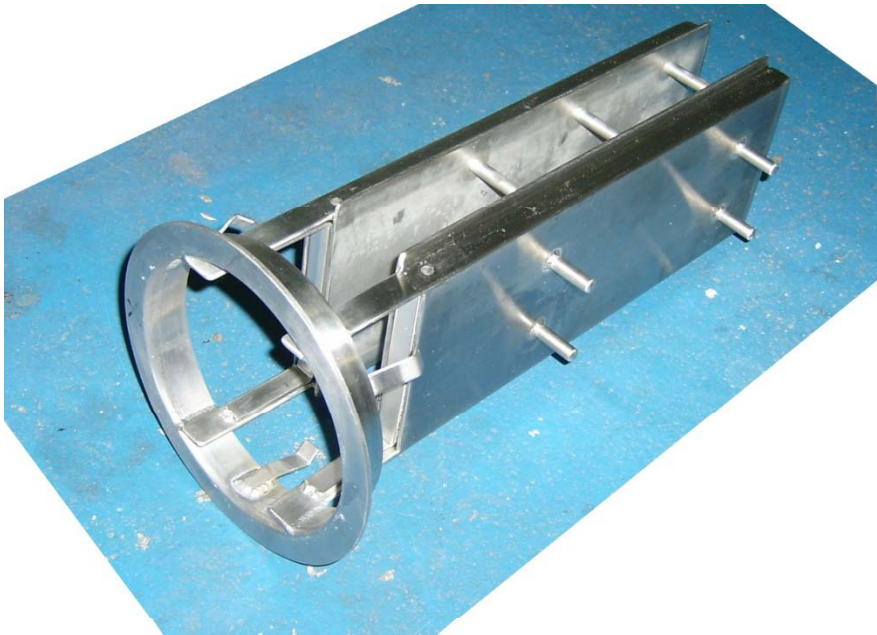
Regards

Ashutosh.

Photographs accompanying December 2005 correspondence tell the complete story. There is zero scale deposition in the MFC treated well head piping after 15 months in service.

The Technology:

Scale-X[®] Magnetic Fluid Conditioners are built application specific using powerful rare earth magnets in precision crafted 316L stainless steel



Petronas pre MFC shutdown report



MEMORANDUM

Kepada:	En. Haris bin Manhakim; PM9 Head, Operations Platform Superintendent Tinggi-A
Daripada:	Azmee bin Osman Operations Engineer (Tinggi/Pulai field)
Rujukan Kami:	Tarikh: August 25th. 1998

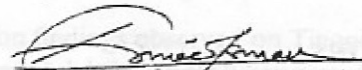
TINGGI-A SHUTDOWN REPORT

Sirs,

Please find herewith the Shutdown Report for Tinggi-A installation performed on August 21st. to 23rd. 1998 for your perusal.

Thank you.

Regards


Azmee bin Osman 25/08/98

Tinggi-A Offshore Platform Extract from Shutdown Report August 1998 With explanatory notes.

This report detailed the condition of the platform at shutdown and actions taken to descale vessels and valves, etc..

Only Vessel V-130 conditions are shown in this extract. It along with its down stream valves was the most severely scaled area on the platform and was the limiting factor in production output.

V130 condition before installing MFCs

V-130 2nd stage Separator [August 98 s/d]

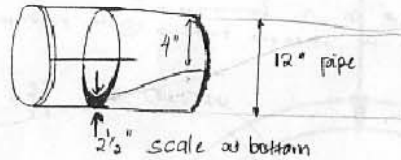
Tinggi-A Offshore Platform
Condition of Vessel V-130 at shutdown before de-scaling.

Note that the stand pipes are severely scaled and the water outlet stand pipe is almost totally closed. Fluid flow out of V-130 was significantly reduced.

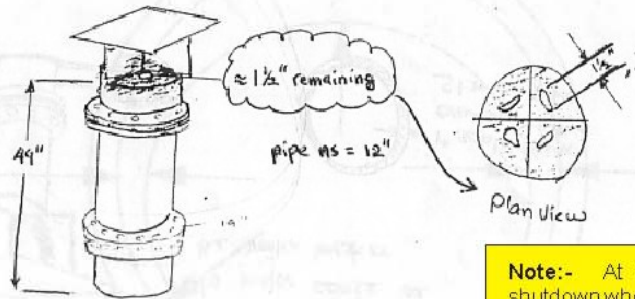
It's downstream valves, not shown here, were also severely scaled and inoperable.

Drop off in production over 3 months between de-scaling shutdowns was **18 percent**.

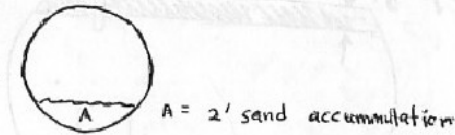
liquid inlet



oil outlet

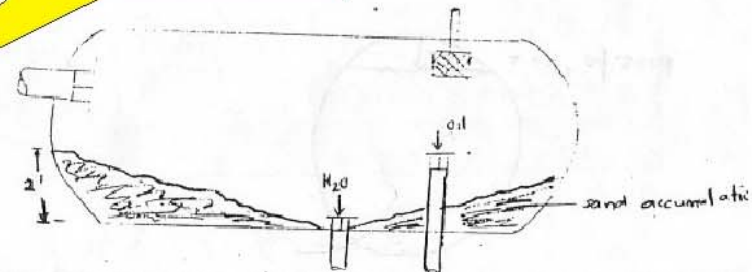
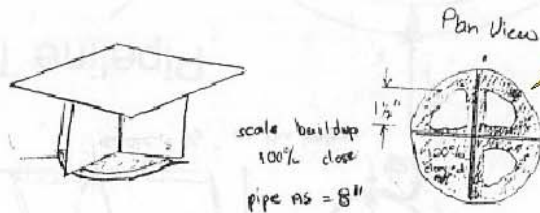


Vessel Diameter = 2.85 OD
 Length = 7.5 SS



Note:- At the 3 monthly platform shutdown when the Scale-X MFCs were installed in August 2001, the water outlet stand pipe was scaled totally closed.

Water outlet



- Remedy Activity completed -
- ① Chipping at inlet nozzle (Completed only 1 ft from deflection plate)
 - ② Chipping at oil outlet water breaker completed
 - ③ Sand pipe of nozzle was coated with lead
 - ④ Chipping at water outlet water breaker completed
 - ⑤ Acid cleaning at water outlet performed
 - ⑥ Valve handle (4 piece)

Original Specification from Carigali

Tinggi-A Offshore Platform Petronas Specification for Application of Magnetic Fluid Conditioners (MFCs)

The information below was the Petronas specification supplied by Azmee bin Osman to Magnetic Technology Australia (MTA) in 1999 for the application of Scale-X MFCs to solve the scale problems on the Tinggi-A Offshore Platform.

Scale-X MFCs exceeded this specification requirements.

WAY FORWARD THOUGHT FROM VENDOR

MEANS

MEANS OF PREVENTION THAT COULD MINIMISE / ELIMINATE SCALE BUILD-UP

DELIVERABLE

1. → COULD ELIMINATE THE NEEDS OF
 - 18 HRS QUARTERLY SD
 - 3 DAYS SIX MONTHLY SDWITH ASSUMPTION OF CHEMICAL INHIBITION STILL PRACTICED
2. HENCE, MEANS PROPOSED SHALL ABLE TO MINIMISE THE SD NEEDS AT LEAST YEARLY WHERE 1 ST. REQUIREMENT SHALL BE A YEAR AFTER INSTALLATION.
3. MEANS PROPOSED SHOULD BE ONE-OFF INSTALLATION i.e. ZERO OR MINIMAL MAINTENANCE.

Note :

- Should the "means" proposed require regular replacement, please specify. PCSB will then carry feasibility versus existing opex of regular shut-down and descaling.
- * - Vendor to provide Technical Literature of "Magnetic Descaler" Versus "Chemical Descaler" ←

End