Targa Midstream Services, L P

Maintenance & Operations Improvement Program Drives Methane Reductions

13th Annual Implementation Workshop
October 23-25, 2006
Houston, TX

Overview

- ★A Different Approach
- ★Program Specifics
- ★Results

It all boils down to……

CHANGE THE PEOPLE

OR

CHANGE THE PEOPLE

A DIFFERENT APPROACH

Program is:

BEHAVIORAL FOCUSED

work process improvements, right behaviors established, accountability, communication

VS.

A CAPITAL INVESTMENT

new, more efficient equipment, technology or engineering

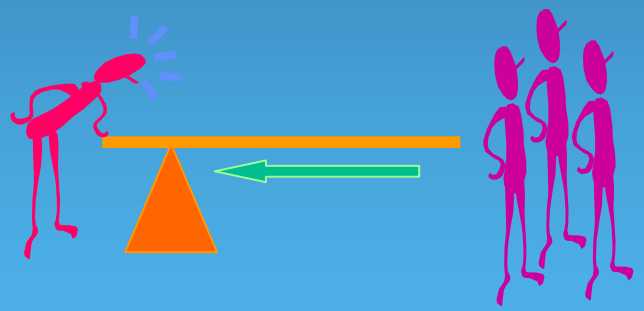
BEHAVIORAL APPROACH

- ★ Set Expected Behaviors – Beyond Goals and Objectives but expected actions
- ★ Set Antecedents, (the plan or approach) - Specific steps or processes to get expected behaviors
- ★ Measure / Communicate Results – Participants track results, discuss incidents and report out monthly
- ★ Hold Each Other Accountable – Participants own / police

Duh!

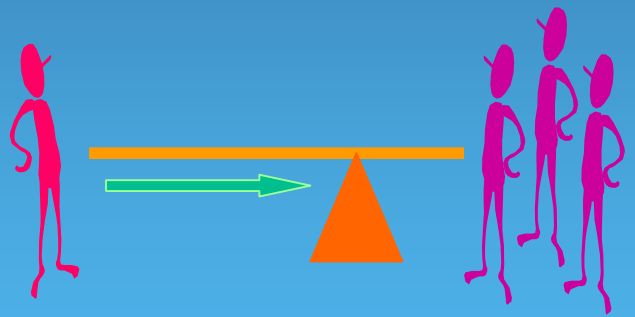
Real "leverage" is achieved when everyone has skills, knowledge and information ... and is empowered and held accountable to ACT.

Before



Vs.

After



Program Specifics / Details

WITHIN TARGA IT'S CALLED

- **OIP – OPERATIONS IMPROVEMENT PROGRAM**
  - Focus on behaviors and processes specific to our Operators that improve operational margins and performance

- **MIP – MAINTENANCE IMPROVEMENT PROGRAM**
  - Focus on behaviors and processes specific to our Maintenance Technicians to improve equipment efficiency and reliability

OIP / MIP Overall Objectives

MIP

- Equip. operating within OEM / design specs
- #1 and #2 impact equipment established
- Scheduled vs unscheduled >75%
- Correct consistent PMs performed
- Failure rates reduced by 2/3 (target of <5 / unit / yr)
- Maximize equip. utilization (>95% HP utilized)
- Top five Worst Actors reviewed and addressed monthly
- RCFAs performed on major / repetitive incidents

OIP

- Discuss, understand and address, operating incidents (flaring, upsets)
- RCFAs on major / repetitive incidents
- Operate within design parameters
- Surveillance rounds defined and completed
- Reduce fuel / energy consumption (site specific)
- Maximize margin (site specific)
- Improve balance across facility (site specific)
- Reduce / understand chemical consumption and costs (site specific)

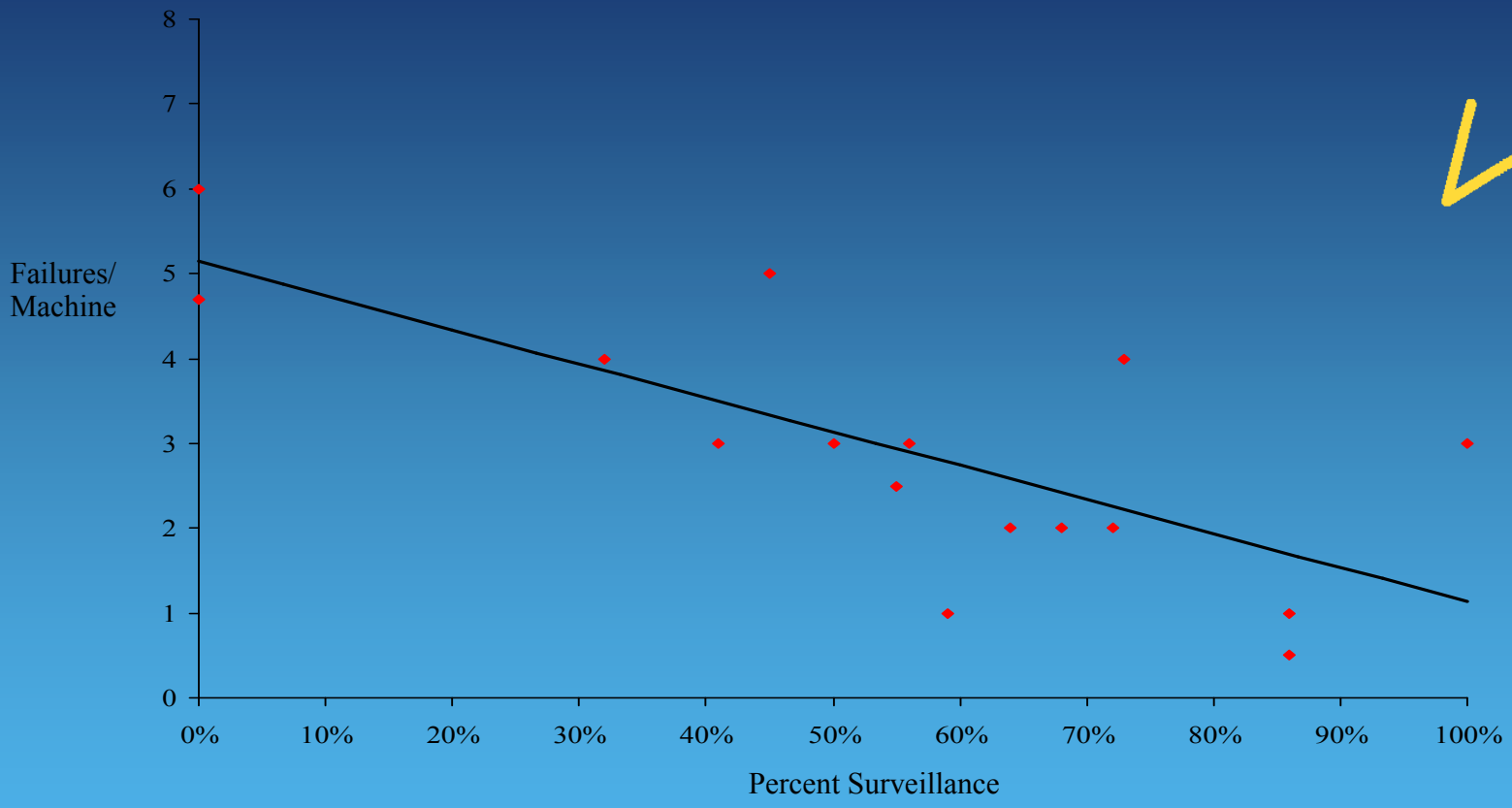
REQUIRED MIP BEHAVIORS

(The actions required to get the results we are after)

- ★ Complete data and equipment in Maximo
- ★ Impact Analysis completed for Assets and #1 and #2 identified in data base
- ★ PM Job Plan completed as required
- ★ Weekly equipment checklist completed and reviewed against OEM operating specs
- ★ Lube oil samples taken and analysis reviewed monthly
- ★ Attend MIP meetings / report on assigned equipment
- ★ Top five Worst Actors tracked, addressed and discussed

Weekly Check List East 7044 Serial # 336249									
Date Performed February & March 2006									
Employee Name Rodney Flemmons									
	OEM	WK1		WK2		WK3		WK4	
Date		**21-Feb**		**1-Mar**		**14-Mar**		**28-Mar**	
Engine Hours		**28558**		**28583**		**28712**		**28992**	
RPM	**1200**	**900**		**1000**		**945**		**1025**	
Record Governor Position		**36**		**52**		**43**		**55**	
Water Temperatures In & Out	**180-210**	**168-180**		**175-185**		**170-177**		**165-173**	
Oil Temperatures In & Out	**180-210**	**170-178**		**175-188**		**166-180**		**173-181**	
Oil Pressure	**40-55**	**58**		**57**		**57**		**52**	
Oil Pressure Differential	**24psig**	**8**		**8**		**8**		**8**	
Lube Oil Consumption	**6gal/24hrs**	**6944**		**6954**		**6981**		**7002**	
Fuel Supply pressure to regulators	**24-50psig**	**20**		**20**		**20**		**20**	
		L. Bank	**R. Bank**	**L. Bank**	**R. Bank**	**L. Bank**	**R. Bank**	**L. Bank**	**R. Bank**
Fuel Supply pressure to carburetors	**3-5" H2O**	**4.1**	**3**	**3.4**	**2.8**	**3**	**2.7**	**3**	**2.4**
Manifold Pressure/Vacuum		**4.25**	**4.45**	**4.62**	**4.87**	**4.08**	**4.2**	**4.57**	**4.66**
Record Air Filter differential pressure		**-1.8**	**-1.4**	**-2.1**	**-2.1**	**-2.1**	**-1.5**	**-2.5**	**-2**
Air Fuel Ratio Controller Target Voltage		**0.7**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**
O2 sensor voltage reading		**0.68**	**0.7**	**0.72**	**0.68**	**0.71**	**0.7**	**0.68**	**0.71**
Stepper Position		**1207**	**1126**	**1142**	**1119**	**1117**	**1118**	**1123**	**1119**
Catalytic Convertor temperature in - out	Max. 1250F	**989-992**		**1036-1036**		**991-1009**		**1037-1046**	
Crankcase Pressure	**" H20**	**1.6**		**3.8**		**-3.2**		**3**	
Establish correct ignition timing (Task 1.12)		**20**							
Ensure ignition is firing on all cylinders									
Comments:									
2-3 Changed 6L head									
2-9 Rebuilt fuel regulators									
Cates ran emissions 3-10 Passed									
WEEK ONE 2-21									
COMPRESSOR									
Oil Pressure		**61**							
Oil Pressure Differential		**2**							
Compressor Cylinder Temperatures		#1 cc	#2 cc	#3 cc	#4 cc				
		208	**196**	**210**	**197**				
Compressor Operating Pressure		Suction	Interstage	Discharge					
		180	**410**	**920**					
Scan compressor valves and record	# 1 HE	# 2 HE		# 1 CE	# 2 CE				
# 1 Compressor Cylinder Suction	**86**	**88**		**90**	**92**				
# 1 Compressor Cylinder Discharge	**179**	**180**		**177**	**179**				
# 2 Compressor Cylinder Suction	**79**	**78**		**86**	**83**				
# 2 Compressor Cylinder Discharge	**182**	**185**		**180**	**181**				
# 3 Compressor Cylinder Suction	**89**	**91**		**94**	**97**				
# 3 Compressor Cylinder Discharge	**181**	**178**		**180**	**182**				
# 4 Compressor Cylinder Suction	**83**	**83**		**88**	**85**				
#4 Compressor Cylinder Discharge	**184**	**185**		**186**	**185**				

Equipment that received the greatest amount of surveillance had the fewest failures



This is an excellent example the maintenance improvement effort changing maintenance practices and becoming embedded in the organization

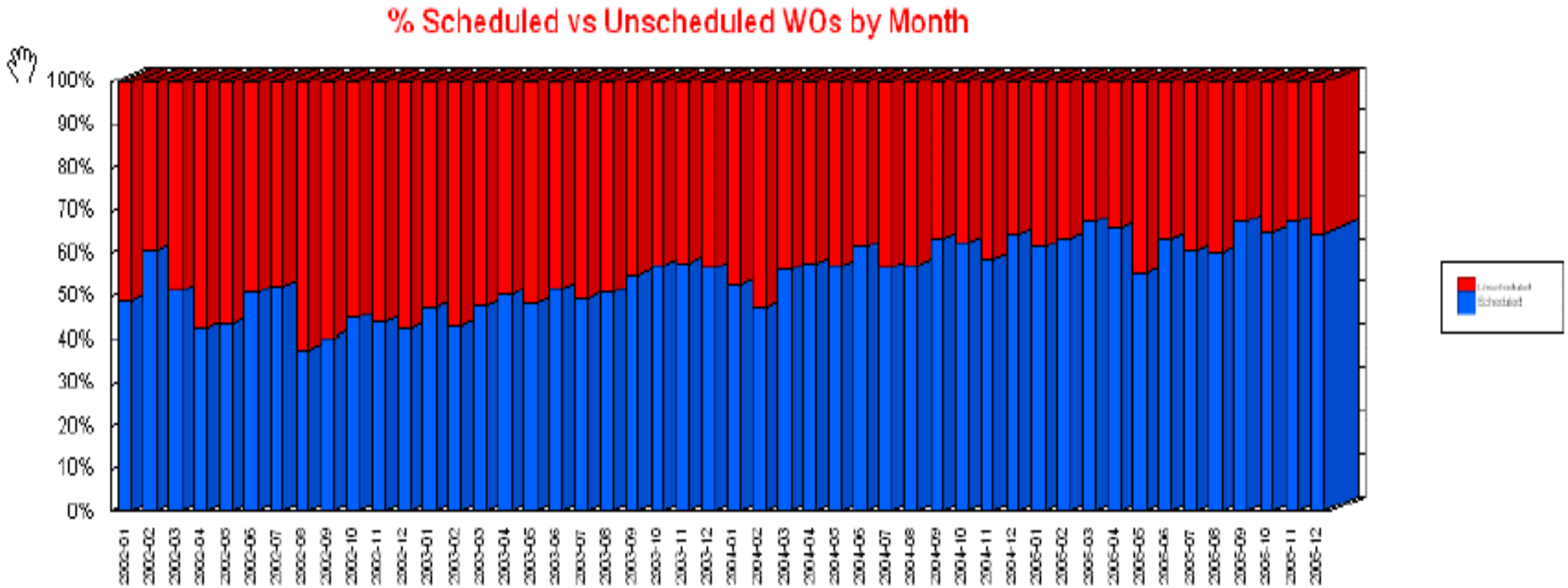
(1) Percent Surveillance = (number of completed surveillance sheets)/(number of surveillance sheets that should have been completed)
(2) Failure data collected from DMMS

MIP MEASURES

(HOW WILL WE MEASURE PROGRESS/SUCCESS?)

- ★ UNIT INCIDENT RATE
- ★ PM COMPLETION %
- ★ % OF SCHEDULED VS UNSCHEDULED WORK
- ★ MEAN TIME BETWEEN FAILURES / REPAIRS (especially after PM)
- ★ WORK ORDER AGING
- ★ WORST ACTOR LISTS
- ★ ANALYSIS REPORT on HP UTILIZATION / CONDITION

2002 - 2005 Scheduled vs Unscheduled Work Orders



Jan – Dec. 2002	Jan – Dec. 2003	Jan – Dec. 2004	Jan – Dec. 2005
54% - unsched	48% - unsched	44% - unsched	40% - unsched
46% - schedule	52% - schedule	56% - schedule	60% - schedule

REQUIRED OIP BEHAVIORS

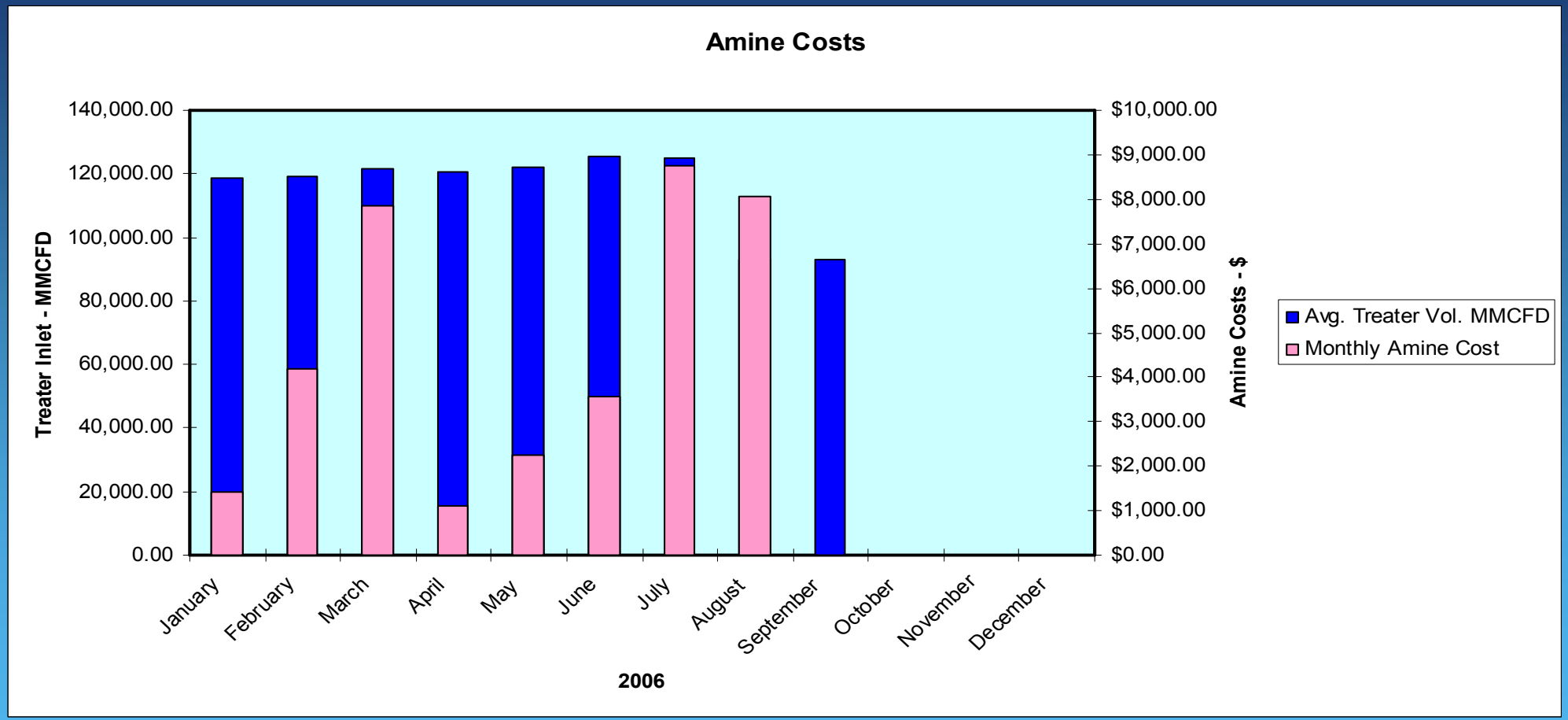
(The actions required to get the results we are after)

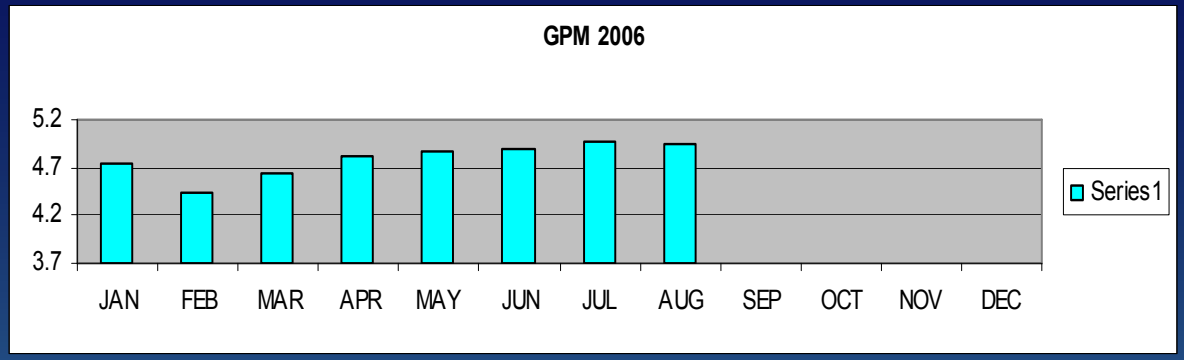
- ★ Complete data and incidents input into Maximo
- ★ Incidents tracked, documented and reviewed (flaring, upsets, off spec, instruments in manual vs auto). $$ values established for each
- ★ Key Operating parameters tracked, reviewed and analyzed (recoveries, fuel / energy consumption, residue BTU, product specs, etc)
- ★ Design parameters for equipment identified for operating surveillance purposes
- ★ Surveillance procedures completed as required for operating equipment
- ★ RCFAs conducted on significant operating events
- ★ Operating Procedures followed (start-up / shutdown procedures)
- ★ Attend monthly OIP meetings and report on assigned area

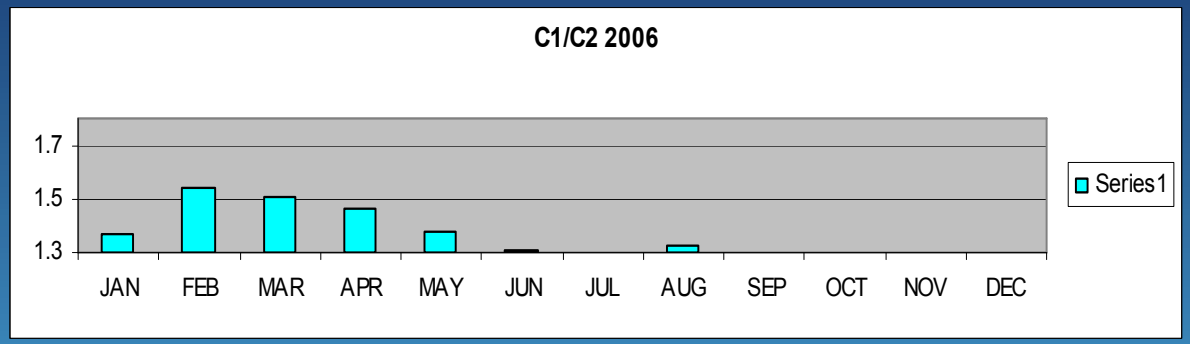
OIP MEASURES

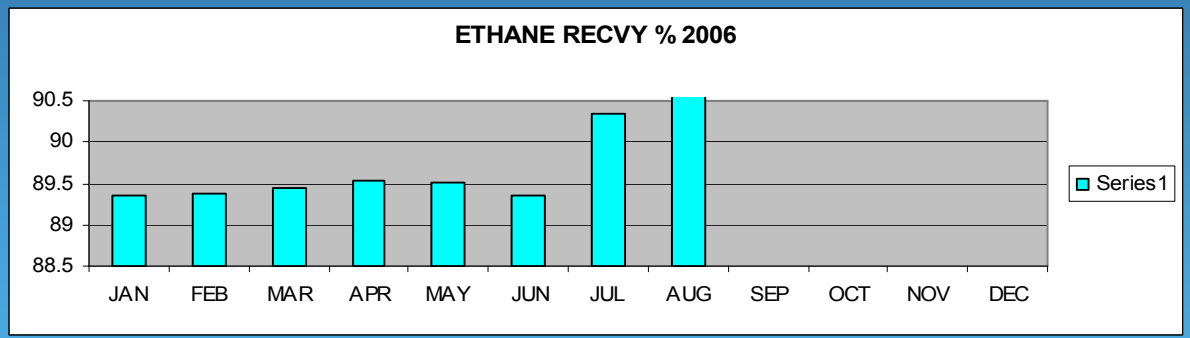
(HOW WILL WE MEASURE PROGRESS/SUCCESS?)

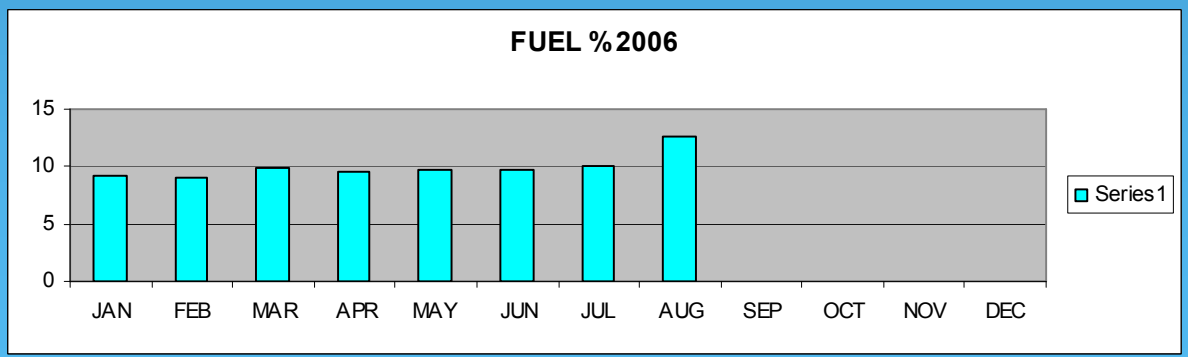
- ★ Fuel (energy) consumed / MCF
- ★ Design Capacity vs. actual capacity
- ★ Margin – cents / MCF
- ★ Recoveries (GPM)
- ★ Flared volumes
- ★ Chemical usage and associated cost
- ★ Cost of Incidents


Amine Costs
140,000.00
120,000.00
100,000.00
80,000.00
60,000.00
40,000.00
20,000.00
0.00
Treater Inlet - MMCFD
$10,000.00
$9,000.00
$8,000.00
$7,000.00
$6,000.00
$5,000.00
$4,000.00
$3,000.00
$2,000.00
$1,000.00
$0.00
Amine Costs - $
January
February
March
April
May
June
July
August
September
October
November
December
2006
Avg. Treater Vol. MMCFD
Monthly Amine Cost


GPM 2006
5.2
4.7
4.2
3.7
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
Series1


C1/C2 2006
1.7
1.5
1.3
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
Series1


ETHANE RECVY % 2006
90.5
90
89.5
89
88.5
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
Series1

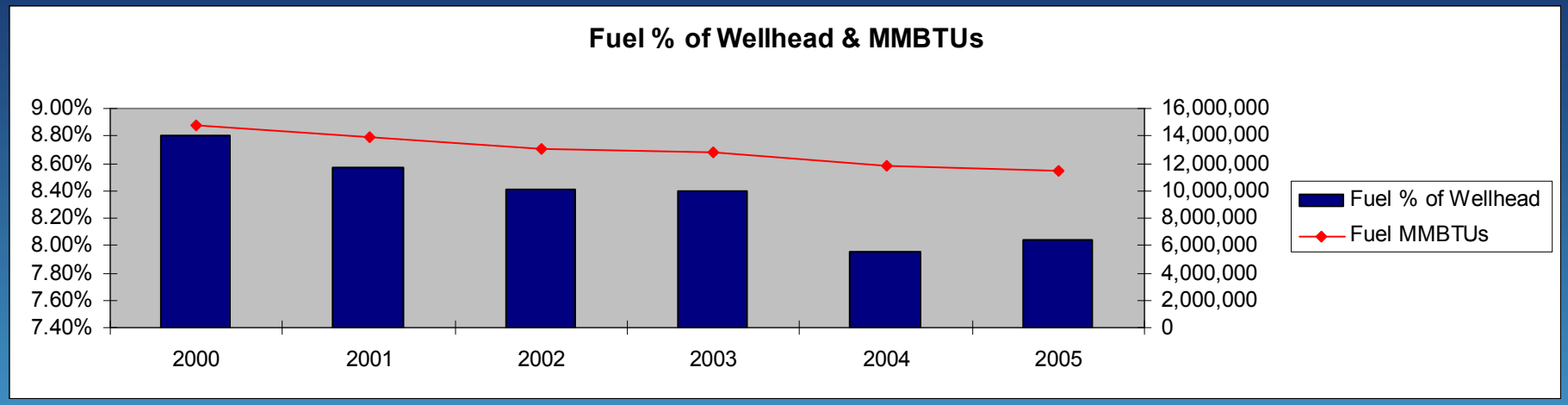

FUEL % 2006
15
10
5
0
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
Series1

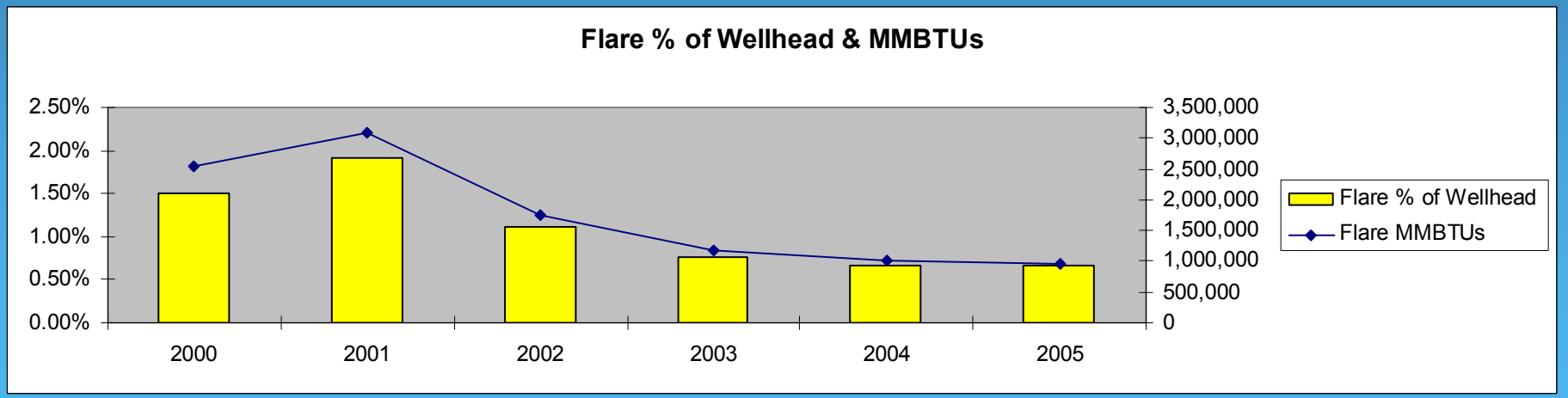
	Incidents	Call outs	Person(s) Called out	Flared vol							
				Waddell low field	Residue P-44	Acid Gas P-154	North Line P-167	Waddell Line P-168	Monahans Line P-169	Cond Gas P-178	Monahans High Pressure P-162...11
1		Block 42, Waddell 7,8, Ponderosa 6, Station 2, Hutch Sealy	Arriaga, Guevara, Lord, Teague								
2											
3	Enterprise valve shut, no reason (436)										
4											
5											
6											
7		Waha, Monhans plant 9	Graves								
8											
9		L&H 6, Janelle Edwards, Ponderosa 11, 12	Graves , Arriaga								
10											

FLARING SUMMARY

Month	GG Flared - MCFD	Residue Flared - MCFD	Acid Gas Flared	Total Flared - MCFD	% of Inlet Flared	Opportunity Cost - $
January	0	0	0	0	0.00%	$0
February	474	0	1,967	474	0.01%	$0
March	1,019	0	416	1,019	0.03%	$8,152
April	0	0	0	0	0.00%	$0
May	1,989	885	854	2,874	0.08%	$17,819
June	11,723	7,583	2,172	19,306	0.51%	$108,114
July	12,658	2,879	3,099	15,537	0.40%	$99,437
August	10,343	589	602	10,932	0.31%	$76,524
September	0	0	0	0	0.00%	$0
October	0	0	0	0	0.00%	$0
November	0	0	0	0	0.00%	$0
December	0	0	0	0	0.00%	$0
Total YTD	**38,206**	**11,936**	**9,110**	**50,142**	0.17%	**YTD Opportunity Costs**
						$310,045

THE BOTTOM LINE – MORE METHANE TO MARKET AND MORE REVENUE


Fuel % of Wellhead & MMBTUs
9.00%
8.80%
8.60%
8.40%
8.20%
8.00%
7.80%
7.60%
7.40%
16,000,000
14,000,000
12,000,000
10,000,000
8,000,000
6,000,000
4,000,000
2,000,000
0
2000
2001
2002
2003
2004
2005
Fuel % of Wellhead
Fuel MMBTUs

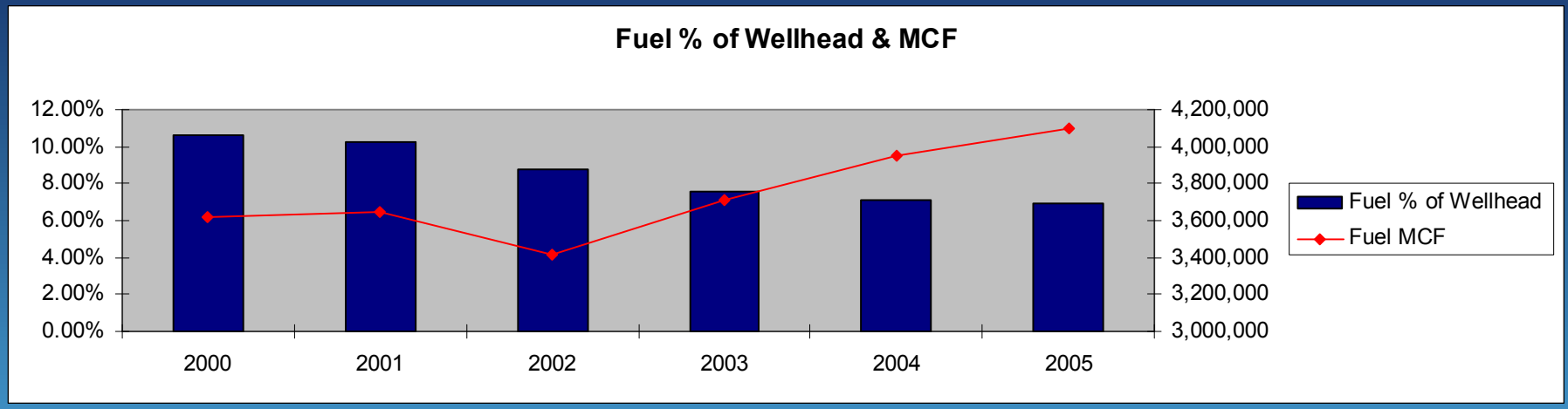

Flare % of Wellhead & MMBTUs
2.50%
2.00%
1.50%
1.00%
0.50%
0.00%
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
2000
2001
2002
2003
2004
2005
Flare % of Wellhead
Flare MMBTUs

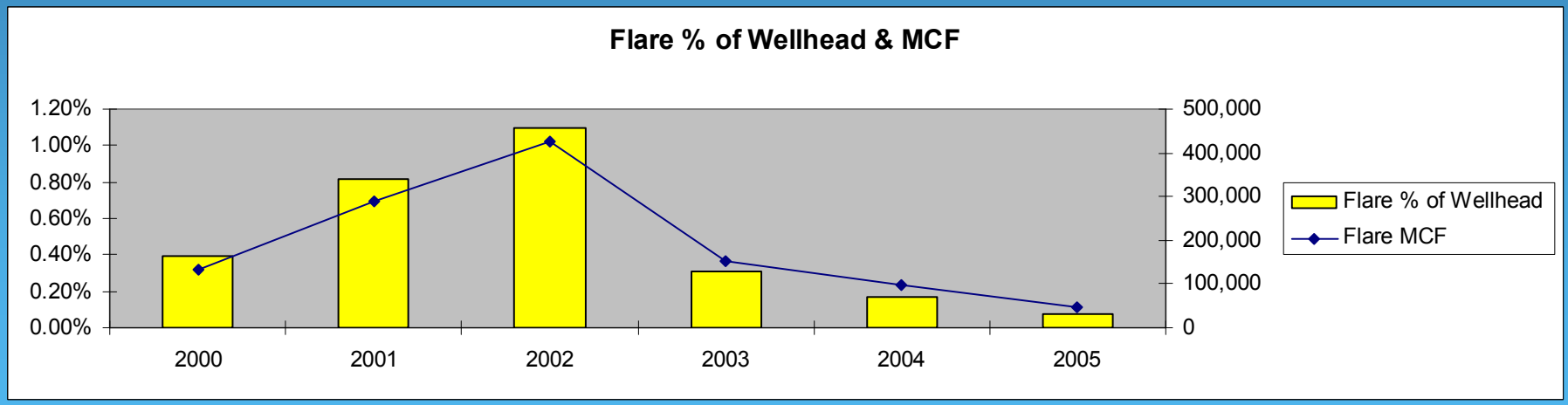
Area A

	2000	2001	2002	2003	2004	2005		
Fuel % of Wellhead	8.80%	8.57%	8.41%	8.40%	7.95%	8.04%	Rate of Change 2000 - 2005	Total Savings 2000 - 2005
Flare % of Wellhead	1.50%	1.91%	1.12%	0.77%	0.67%	0.67%		
Differential from previous year								
Wellhead change		**-3.50%**	**-4.25%**	**-2.14%**	**-1.84%**	**-4.26%**	**-15.03%**	
Total Fuel & Flare % Change		-1.87%	-12.92%	-5.84%	-7.71%	-3.25%	-28.15%	
$ Saved		-$1,167,020	$4,307,312	$2,618,318	$4,428,582	-$936,747		$9,250,445
MMBTU Saved		-282,393	1,473,155	547,431	819,282	-130,287		2,427,188
Fuel % Change		**-6.01%**	**-6.06%**	**-2.26%**	**-7.06%**	**-3.21%**	**-22.37%**	
$ Saved		$1,536,267	$735,430	$73,409	$3,609,210	-$899,695		$5,054,621
MMBTU		371,742	251,526	15,348	667,699	-125,134		1,181,181
Flare % Change		**22.36%**	**-43.72%**	**-32.69%**	**-14.77%**	**-3.75%**	**-61.97%**	
$ Saved		-$2,703,287	$3,571,882	$2,544,909	$819,372	-$37,052		$4,195,824
MMBTU		-654,135	1,221,629	532,083	151,583	-5,153		1,246,007

*Fuel - 100% methane

*Flare - 95% methane


Fuel % of Wellhead & MCF
12.00%
10.00%
8.00%
6.00%
4.00%
2.00%
0.00%
4,200,000
4,000,000
3,800,000
3,600,000
3,400,000
3,200,000
3,000,000
2000
2001
2002
2003
2004
2005
Fuel % of Wellhead
Fuel MCF


Flare % of Wellhead & MCF
1.20%
1.00%
0.80%
0.60%
0.40%
0.20%
0.00%
500,000
400,000
300,000
200,000
100,000
0
2000
2001
2002
2003
2004
2005
Flare % of Wellhead
Flare MCF

Area B

	2000	2001	2002	2003	2004	2005	Rate of Change 2000 - 2005	Total Savings 2000 - 2005
Fuel % of Wellhead	10.59%	10.27%	8.81%	7.60%	7.12%	6.92%		
Flare % of Wellhead	0.39%	0.82%	1.10%	0.31%	0.17%	0.08%		
Differential from previous year								
Wellhead change		**3.91%**	**9.32%**	**25.83%**	**13.76%**	**6.55%**	**73.27%**	
Total Fuel & Flare % Change		4.88%	-2.32%	42.00%	4.86%	2.23%	10.28%	
$ Saved		-$145,356	$1,341,112	$4,858,370	$1,870,475	$1,245,356		$9,169,957
MCF Saved		-36,333	#REF!	977,444	343,911	175,156		1,918,776
Fuel % Change		**0.77%**	**-6.27%**	**8.57%**	**6.52%**	**3.53%**	**13.10%**	
$ Saved		$454,623	$1,663,702	$2,934,749	$1,461,056	$848,993		$7,363,123
MCF		113,638	568,909	590,435	268,634	119,408		1,661,024
Flare % Change		**115.28%**	**47.38%**	**-64.75%**	**-36.22%**	**-51.49%**	**-65.40%**	
$ Saved		-$599,979	-$322,590	$1,923,620	$409,418	$396,363		$1,806,832
MCF		-149,972	-110,311	387,009	75,277	55,747		257,750

*Fuel - 100% methane

*Flare - 95% methane

Contact Information

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