

EPA NATURAL GAS STAR PROGRAM



EPA Welcomes a new Natural Gas STAR Partner



Devon Energy
becomes an
official partner in
the EPA Natural
Gas STAR
Program on
July 21, 2003

Focus

Primary focus for a successful program

- Encouragement and support from upper management
- Select the right implementation manager
- Roll the program out to operations
- Educate the field on the goals of the program
- Recognize successes
- Research historical reductions
- Locate documentation for reductions
- Develop a tracking system

Challenges

Previous Company Participation in the STAR Program

- Pennzoil Company
- Mitchell Energy
- Ocean Energy

Ocean Energy was the only company to submit emission reductions

- Numbers were inconsistent
- No documentation
- Inaccurate reports

Moving Forward

Devon requested EPA take Ocean's reductions off of the books to allow Devon to start fresh

Strategy

- Track down accurate accountable reductions
- Assure thorough documentation
- Encourage future reporting from the field

Results

- Competition amongst divisions
- Accurate numbers
- Good documentation
- Team spirit

Program Participation - 2004

Devon actively participated in a video shoot in the Bridgeport area showing Devon's involvement in the STAR Program Produced by a public TV station

- 2 minute version for airing during environmentally related segments
- 12 minute version to be used by the STAR Program to promote the Program to other companies

Participated in an interview for the “STAR Profile” section of the Program's fall edition of the STAR quarterly newsletter.

Program Participation - 2004

Co-authored a SPE paper on the optimization of separator pressure to reduce methane emissions.

- Paper was presented at the annual SPE conference held in Galveston, Texas.
- Authored with the intent of creating a PRO Fact Sheet for the STAR Program.

Named EPA Natural Gas STAR “Rookie of the Year”

Program Participation - 2004

Developed a monthly STAR newsletter to be distributed to managers to assure communications regarding the status of the Program. Newsletter contains:

- A STAR PRO Fact Sheet
- Graph reflecting Devon's emission reductions annually
- Status table providing a breakdown by
 - Division
 - Area
 - Activity



Natural Gas STAR Partner Newsletter

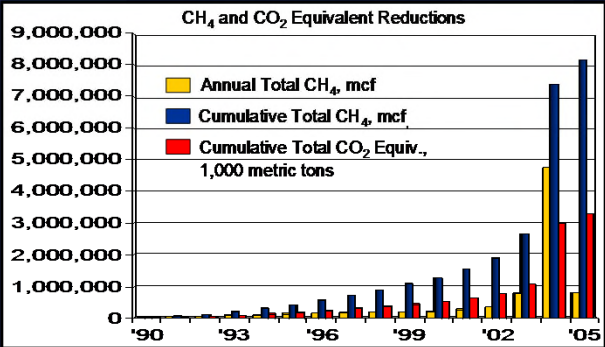


March 2005

Welcome

This is the March 2005 installment of a monthly newsletter highlighting Devon's activities in the Environmental Protection Agency (EPA) Natural Gas STAR Program. These monthly installments summarize Devon's methane emission efforts and a specific partner reported emission reduction opportunity that might be of benefit at certain Devon operations.

STAR Reductions Through 2005	
Methane Reduction Activity	Methane Reductions
Central Division	3,015,124
Southern Division	3,087,134
South Texas	1,204,828
Carthage	1,441,498
Groesbeck	441,110
Western Division	2,068,677
Rockies	804,860
Permian	1,204,317
Gulf Division	-
Midstream	-
Total Reductions	8,170,935



PRO Fact Sheet of the Month

"Portable Desiccant Dehydrators"

This month, the highlighted PRO (Partner Reported Opportunities) Fact Sheet document is related to "Portable Desiccant Dehydrators". The attached PRO Fact Sheet feature provides more details about the technology and associated benefits of desiccant dehydration units. Additional information on desiccant dehy's may be found in the EPA Lessons Learned report located at http://www.epa.gov/gasstar/pdf/lessons/ll_desde.pdf

If you have an idea or recognize an opportunity for a process change or pressure setting to improve efficiencies or reduce venting, please discuss these ideas with your EHS specialist or call Steve O'Connell at (405) 552-4672.

Each monthly newsletter contains a PRO Fact Sheet and a link to a Lessons Learned on the EPA Gas STAR website

In this Issue:

- Welcome
- Division Status Table
- Annual Reduction Graph
- PRO Fact of the Month

Check out Devon's EPA video on the K drive at: [K:\Universal\Permanent\EHS Dept. Presentations\Natural Gas STAR](#)

Program Participation - 2005

- Sponsored and co-sponsored EPA Natural Gas STAR Technology Workshops Oklahoma City and Casper
- Participated in a leak detection survey at the Bridgeport Plant (USEPA Natural Gas STAR DI&M Grant)
- Highlighted the STAR program as a pollution prevention initiative at an Environmental Federation of Oklahoma Pollution Prevention Workshop
- Developed a database to track future methane reduction activities
 - Database to be given to EPA for other Partners use upon completion

STAR Program BMP's

- BMP 1: Replace High-Bleed Pneumatic Controls
 - ~2.23 Bcf of methane emission reductions through 2004



STAR Program BMP's

BMP 2: Install Flash
Tank Separators on
Glycol Dehydrators
– ~87.85 Mmcf of
methane emission
reductions through
2004



STAR Program BMP's

- BMP 3: Partner Reported Opportunities (PRO's)
 - REC's
 - AOF Testing



Summary of Devon Reductions

- Overall Reductions - 13.2 Bcf (projected through 2005)
 - Low Bleed Pneumatics 2.879 Bcf
 - Reduced Emission Completions 7.120 Bcf
 - AOF Testing 478 Mmcf
 - VRU's 1.125 Bcf
 - Dehy Controls 87.85 Mmcf
 - Plunger Lift Systems 558 Mmcf
 - Flared Volumes 958 Mmcf

Devon's Accomplishments

- Over 13.2 BCF in total methane emission reductions since 1990 (projected through 2005)
- 5.5 BCF reported for the year 2004
 - 54% from RECs
 - 22% from low bleed pneumatics
 - 9% from VRUs
 - 7% from flared volumes/reduced venting
 - 4% from plunger lift systems

Economics

Year	Volume	Gas Price	Revenue
1990	19.73 Mmcf	\$ 1.52	\$29,989
1991	38.25 Mmcf	\$ 1.88	\$71,910
1992	47.81 Mmcf	\$ 1.67	\$79,842
1993	98.24 Mmcf	\$ 1.95	\$191,568
1994	124.71 Mmcf	\$ 2.02	\$251,914
1995	205.41 Mmcf	\$ 1.62	\$332,764
1996	296.96 Mmcf	\$ 3.42	\$1,105,603
1997	341.71 Mmcf	\$ 4.09	\$1,397,593

Economics

Year	Volume	Gas Price	Revenue
1998	254.81 Mmcf	\$ 2.20	\$560,582
1999	272.54 Mmcf	\$ 2.29	\$624,116
2000	846.36 Mmcf	\$ 3.77	\$3,190,777
2001	714.42 Mmcf	\$ 4.51	\$3,222,034
2002	623.60 Mmcf	\$ 3.16	\$1,970,576
2003	1.14 Bcf	\$ 4.96	\$5,654,400
2004	5.52 Bcf	\$ 6.15	\$33,948,000
Total	10.55 Bcf		\$52,541,671

Fort Worth Basin Success Story

- Implementation Manager discussed STAR opportunities with the Production Supervisor in the FWB
- Reviewed opportunities to reduce venting during cleanup procedures after fracs
 - Evaluated portable flare systems
 - Supervisor discussed it further with superintendents and foreman
- Completions Superintendent decided there was a better option available

FWB Reduced Emission Completions (RECs)

Previous procedure upon completion of the frac job

- Flow well back to frac tanks until clean up is completed
- Snub tubing in the hole while venting gas back to reduce the pressure on the well
- Run required tests to atmosphere to calculate the absolute open flow potential

FWB REC's

Current procedure upon completion of the frac job

- Install temporary flowline and meter run on location during completion process
- Flow well back to frac tanks until gas is encountered



FWB REC's

- Turn well down line and sell gas while cleaning up the well
- Snub tubing in the hole while selling gas back to reduce the pressure on the well
- Run required tests through sales to calculate the absolute open flow potential



Benefits of FWB REC's

- Reduces the volume of methane emissions
- Allows wells to be cleaned up longer with better results
- Additional gas sales
- Safer work environment



Economics of FWB RECs

Initiated RECs in the FWB in March of 2004

Gas Recovered * (mcf)	\$6.15/mcf	Incremental Cost	Net Gas Sale Value
1,154,454	\$7,099,895	\$962,560	\$6,137,335

* STAR credits - 975,514 mcf (methane - 84.5%)

Economics of FWB RECs

Average Additional Sales per Well \$61,738

Average Incremental Cost per Well \$8,370

Additional Revenue per Well \$53,368

devon



Success Breeds Success

- Measuring and reporting results in competition
 - Everyone benefits!
- Due to the success of the FWB RECs other areas are looking at using the technology
 - Completed several RECs in the Washakie Basin of Wyoming in August (constructed trailer mounted equipment in lieu of renting)