



Billings Refinery

June 9, 2015

Dear Council Member:

Please find attached the minutes from our May 12, 2015 CAC meeting. The next CAC meeting will be on **TUESDAY, JUNE 9, 2015** at our usual meeting place – the Phillips 66 Learning Center adjacent to the refinery. Dinner will be from 5:00 to 5:30. The meeting will run from 5:30 to 7:30.

Sincerely,

Ann L. Clancy, Ph.D.
Meeting Facilitator

**Meeting Location:
Phillips 66 Learning Center
415 South 24th Street**

**PHILLIPS 66 BILLINGS REFINERY
CITIZENS ADVISORY COUNCIL
May 12, 2015**

MEETING MINUTES

- Present:** Council members: Keith Beartusk, Paul Dextras, Shirley McDermott, Eileen Morris, Gregory Neill, Melissa Patton, John Pulasky, Jim Ronquillo, Melanie Schwarz, Emily Shaffer, Michelle Zahn, Stella Ziegler
Phillips 66 management: Ray Rigdon, Colin Franks, Randall Richert, Mark Hilbert
Facilitator: Ann Clancy
- Absent:** Bob Carr, Ralph Hanser, Travis Harris, Lance Johnson, Bruce MacIntyre, Katey Plymesser, Andrew Sullivan, Mike Yakawich
- Guests:** CAC Member Guest: Ziggy Ziegler
Phillips 66 Pipeline: Richard Colgrove, Terminal Supervisor; Amy Gross, Field Distribution Facility
City College Process Plant Technology students: Adam Goodburn, Cody Dayley, Shelby Eckart, Austin Pickering
MSU-B student: Joseph Wyatt

AGENDA

- Welcome/Introductions
- Presentation on Pipeline Safety
 - Pipeline Control Center Operations: Bill Brooks, P66 Console Supervisor, Bartlesville, OK
 - P66 River Mitigation Efforts: Carrie Wildin, Division Engineer, Billings, MT
- Subteam Reports: Meet in Park & Southside Outreach
- Refinery & Transportation Updates
- Next Meeting: September 10, Meet in Park event

WELCOME/INTRODUCTIONS

The following visitors were welcomed: CAC member guest Ziggy Ziegler; Phillips 66 Pipeline employees Richard Colgrove, Terminal Supervisor and Amy Gross, Field Distribution Facility; MSU-B student Joseph Wyatt; and City College Process Plant Technology students Adam Goodburn, Cody Dayley, Shelby Eckart, and Austin Pickering.

PRESENTATION ON PIPELINE SAFETY

Pipeline Control Center Operations

Bill Brooks, Phillips 66 Console Supervisor in the company headquarters at Bartlesville, OK, gave an overview of the Pipeline Control Center there which holds 11 working consoles monitoring the company's pipelines 24/7 via satellite. These consoles are used to open pipeline

valves around the country. Bill has been working in the Control Center for 20 years and began the presentation with a photo of Consoles 3 and 4 which operate the Billings area pipelines which transport refined products and crude oil. The Control Center had been located in Ponca City until 5 years ago when they built a new center in Bartlesville. Bill shared an organizational chart showing employees related to operation of the consoles including controllers assigned to operate each Console, different levels of supervisors and managers and training coordinators.

Bill provided some key data about the Control Center:

- Operating 11,000 miles of pipeline (850 miles of third party pipelines)
- 2.0 million barrels per day is moved through pipelines: 60% clean products, 34% crude oil, and 6% natural gas liquids
- Delivery to 24 terminals: 1000 tanks, 5 million barrels of storage capacity with 25,000 points monitored
- Staffing: 11 operating consoles and one simulation console (2 new ones will be added by end of 2015); 67 controllers, 5 console supervisors, 1 lead console, 5 lead controllers, dedicated training & compliance coordinator, operations excellence supervisor, control center engineer, SCADA (pipeline monitoring system) technical IT support team, 1 call group and an operability engineer

Bill shared the company's operational code of excellence:

- Operating our systems in a safe manner
- Safeguarding the public
- Protecting the environment
- Maintaining product quality

In terms of the code of excellence, the company will do the following:

- Operate pipeline systems in a safe manner and if integrity is in doubt, shut down and isolate until integrity can be verified
- Make safety a priority over scheduled rate
- Conduct a thorough shift turnover
- Conduct a thorough console checkout
- Understand and follow procedures and processes
- Respond to all abnormal operating conditions, thinking lead first
- Minimize leak volumes
- Ask for help when a situation is not clearly understood
- Communicate clearly using the "communication handshake" method
- Manage distractions and be attentive to console operations
- Come to work rested and focused
- Constantly strive for improvement
- Abide by company policies

All the operators undergo a 6-month training program and spend time with Bill in the simulation room for 8 hours responding to intense emergency scenarios. If integrity of the pipeline is in any doubt, the pipeline is shut down. When personnel rotate off their shifts, there is a 30 minute hand-off period to ensure proper dissemination of information between operators.

The Control Center procedure encompasses:

- System specific procedures
- Normal and abnormal operating procedures
- Tank line up procedure
- Pump re-start procedure

- Stand-up pressure test
- Tank stand-up test
- Communication Hand Shake

Because clear and accurate communication on the phone and in person is so important, the company has developed communication procedures or standards. About 60% of communication regarding the pipelines is by phone from personnel and field people connecting with each other. Below is the “Communication Handshake” procedure:

1. Discuss, listen, understand.
 - a. What are you doing and how does it impact me?
 - b. What am I doing and how does it impact you?
2. Decide and plan.
 - a. What will you do? What will I do?
3. Inform others.
 - a. Who else needs to know?
 - b. Will this affect anyone else?
4. Recap.
 - a. This is the plan and we agree?
 - b. Is there anything we're missing?

Bill concluded with a diagram of the operational layers of leak detection:

Layer 4 Model based leak detection Predicted system performance vs. actual energy/mass balance	Computational pipeline monitoring methods
Layer 3 Volumetric leak detection Real time system balance Alarms, trends, line pack	
Layer 2 Continuous monitoring Equipment status Analog values Deviation alarms	
Layer 1 Non-continuous monitoring Periodic inventory reconciliation Visual inspection 3 rd party reports	

The following questions/comments from CAC members and guests were recorded:

- *How do you deal with leak detection?* The first defense is the console operators who can catch it.
- *How long do you shut down a pipeline if a leak is detected?* It depends on the spacing of valves in the geographic area and whether the location is a high consequential area like river crossings, living areas with high population density and environmentally sensitive areas. There are manual valves and motor operated valves. We also have modeling programs that limit the spill volume.
- *Could Phillips 66 have such a bad leak?* It depends on the location; for example, there are four crossings on the Yellowstone River. Our company wants to be proactive and prevent spills from happening because, once the volume is released, there is a lot of pressure on the company.
- *Who else has the extensive ER precautions that you do?* Every major oil company takes precautions to be proactive and mitigate spills.

- *What kind of security do you have for your control center?* The physical location is secured against emergencies resulting from extreme weather conditions like tornadoes and there is an access-granted employee list and security guards on duty. We also have cyber-security safeguards. There is nothing in our SCADA (monitoring) system that exports data and we have an IT force that is constantly working on this.
- *If there was something amiss with a pipeline in Billings, would you call first before taking action?* If there is a problem, the control center is the first defense and shuts down the pipeline. Then back-up communications are collected via satellite and cellular data.
- *How often are there shut-downs?* It is a two-part procedure to test for integrity and meter problems. If there are meter problems, the pipeline is shut down. If there is a public reporting of a smell or sheen on water, that can also trigger a shut down. That can happen once a day.
- *Are there repercussions for a shut-down?* Yes. For example, if you're talking about someone calling in about a crude oil pipeline that is then shut down there are financial repercussions. But the company would rather be safe than sorry and we encourage calls from the public regarding safety and potential leaks.
- *How many calls are actual issues?* Less than 10% are really significant. Most of the calls are odor complaints detected around a valve which is usually not leaking.
- *When you get a "one call," do you send someone out?* Any excavation within 30 feet, we have someone on site. We have a meeting first.
- *With your 12-hour shifts, do you have a fatigue factor?* We track incidents and the federal government is taking an active role in this issue. The consoles are designed so that controllers can shift from sitting to standing. There is also special lighting installed to make it brighter and beverages are available.
- *What happens when a person is too fatigued?* Operators are trained to let us know and the outgoing controller and supervisor assess incoming operators for fatigue symptoms.
- *If there is a major break or leak, do you call in other teams to help with damage control?* Yes, we call on other programs and response units for support. For example, Colin is on the IMAT team (internal emergency response team) which can be mobilized within 8 hours to respond to leaks around the refinery and which support the pipelines. We are trained to over-respond at all cost – the better safe than sorry perspective.
- *What is the average age of the pipelines?* Most are from the late 50s and early 60s. They are in better condition today because of the protected coating procedures (cathodic protection) to prevent corrosion.

Phillips 66 River Mitigation Efforts

Carrie Wildin, Division Engineer in Billings, reported on the River Crossing Program and SMO1 MP 2.2 horizontal drill now used for pipelines crossing the Yellowstone River. The company is proud of the program and the horizontal directional drilling (HDD) equipment now used for the majority of river pipeline work. It has minimal impact to the environment.

Carrie showed a map of the pipeline system in this geographic area which includes the Glacier, Yellowstone and Seminole pipelines. Pipelines are governed by the U.S. Department of Transportation, Pipeline Hazardous Materials Safety Administration (PHMSA). The pipeline division in Billings is one of 6 in the U.S. Phillips 66 has a comprehensive pipeline integrity management plan that includes the Pipeline Integrity Program and Enhanced Integrity Program (P&MMs).

Pipeline Integrity Program

Phillips 66 established this program to meet federal guidelines and consists of:

- In-line inspection tools
- HCA/risk analysis
- Emergency flow districting device program

Enhanced Integrity Program

Phillips 66 developed this enhanced program which exceeds the federal guidelines to further guarantee integrity and consists of:

- River crossing risk reduction
- High risk evaluations
- Leak detection
- Pipeline replacements
- Enhanced integrity: coating repairs/reconditioning
- Land movement mitigation

Carrie talked about the pipeline water crossing federal regulations. She noted that the PHMSA does not dictate that depth of cover surveys be conducted on a certain interval for non-navigable waterways (as defined by the Dept. of Transportation 195). PHMSA does require operators to prudently manage the integrity of their assets and audits and holds operators accountable for executing those integrity programs. According to Carrie, Phillips 66 has long had industry leading programs including aggressive management of water crossings in terms of repairs and replacement over the past 20 years. Over the past 5 years, the aggressiveness of this program has significantly increased. The 2011 flooding and Silvertip Pipeline spill in Yellowstone River heightened awareness and accelerated efforts to move risk towards zero in pipeline river crossings.

The company has a “Toward Zero Pipeline Water Crossing” strategy that includes:

- A prioritization system developed to determine higher risk pipeline crossings based on multiple variables specific to the river dynamics and conditions at each crossing (e.g., depth of cover and depth change, channel migration and scour potential, debris potential, and consequences in terms of river width and down river water users).
- Development of temporary and long-term mitigation plans initiated in a 5+ year program consisting of 100 projects costing a total of \$120 million and resulting in 400 permits to date.
- Execution of an ongoing monitoring program that involves real-time monitoring of river flows with progressive action levels and annual and 5-year depth of cover surveys.

Carrie explained that the ongoing monitoring procedures allows for annual depth surveys conducted by third parties on targeted or higher potential risk crossings. All non-HDD crossings are re-surveyed at least every 5 years. The real-time monitoring enables proactive monitoring of snow levels prior to runoff, analysis of historic stream and river flow rates and establishment of maximum river flow rate thresholds, and launching of a USGS website that generates real time stream flow data from 40 stream flow stations. These procedures are shared with other operators in the region and with industry forums. The real-time river flow rates trigger progressive action levels up to and including shutdown and purge of the pipeline.

The Phillips 66 Pipeline Water Crossing Program has a list of supporters, according to Carrie, which include: PHMSA, Montana State Governor’s Office, MTDEQ, Montana Dept. of Natural Resources, various local and county government agencies, US Corps of Engineers, Association of Oil Pipelines, and the Pipeline Safety Trust. It also addresses the long-range scope and magnitude of division-wide river mitigation efforts through 2017 at a cost of almost \$120 million. These mitigation efforts will include new trenched crossings, bank stabilizations, lowering-in-place, and additional fill or concrete matting.

Carrie concluded by showing CAC members and guests a brief history of river crossing construction:

- 1930s-1970s: trenching via river diversion or open trenching, limited by river velocities and flow

- 1980s-1990s: early technology of horizontal directional drilling (HDD), limited by geotechnical conditions and pipeline diameter
- 2000s+: advanced HDD, only limited by extreme geotechnical conditions

She pointed out that when pipelines were originally installed horizontal directional drilling technology was simply not an option because it had not yet been invented. Now, in addition to HDD, there are a variety of inspection tools that are run every 5 years, such as smart pigs and other tools to detect cracks, positional shifts and corrosion. The data collected by these tools is processed and able to show exact locations of breakdowns and leaks.

The following questions/comments from CAC members and guests were recorded:

- *What is the average depth of the pipelines?* Historically, there has been a 3-4 foot cover over ground and a 4-6 foot cover crossing the rivers. The new installations average 40 to 80 feet and up to 200 feet for river crossings.
- *Does the pipeline section under the river look any different from the rest of the pipeline?* Yes, there are additional measures taken for the parts of the pipeline that traverse highly sensitive areas such as thicker steel, tough multilayered coatings and concrete.
- *Was there a pull through Yellowstone River and the island?* Yes, a continuous pull. We contracted out work – we have 10 different contractors we utilize locally and nationally who specialize in this.
- *How did you personally get involved and be inspired to the position you currently hold?* I graduated from the Colorado School of Mines with a degree in civil engineering and economics and I started working with Conoco 15 years ago as a project engineer. I've had 10 different positions around the country and learned about the business. I did the maintenance as well as the engineering side of the business.
- *Do you contract out the cathodic protection system?* Yes for installation, but we monitor internally. There are job opportunities in that field and we recruit for this specialized field.
- *Do you transport natural gas?* Not in this area. There is some liquefied natural gas. Additives are employed at the truck rack for odor detection.
- *What pressure is in line with viscosity?* The high-low pressure ranges from 1500 to 50 pounds.
- *I had a friend who flew planes to inspect the pipelines, is that still done?* It is still a major vehicle for detection and we have flights scheduled weekly. It is the best line of defense.
- *What are the different valve types? Are they spaced, sporadic and strategic?* There is a group in Houston which has a modeling program that detects leak volumes. The technology is changing monthly and we are concerned with population density creeping up on our pipelines.
- *What valve is used for river crossings?* Pipelines crossing the Yellowstone River use a combination of manual check and motorized valves on each side.
- *How often do you check valves?* We check every 6 months from field to console.

CAC SUBTEAM REPORTS

Meet in the Park Subteam

Ann and Colin reported on the following items that were completed by the subteam to date:

- Event theme: Youth and Science Education
- Event date: Thursday, September 10 (to be confirmed)
- Event caterer: Fuddrucker's serving the same menu as last year
- Event vendors & partners: adding new vendors to the list from last year, such as the School District, Elks Club, Home Center and Metro Vista
- Event agenda: Similar to last year but will eliminate announcements by vendors
- CAC 25th Year Anniversary: have banners, a booth and give-aways at the event
- Participant survey: To be further discussed whether to distribute a survey to collect feedback from attendees about the refinery and the City

Southside Outreach Subteam

The subteam has met a couple of times and proposes that the refinery create a postcard-sized magnet to be distributed door to door in the area around the refinery and Southside Park. The magnet will include a phone number and safety and emergency information related to the refinery. The subteam also proposes that the refinery/CAC send out email blasts when there is an emergency or to announce upcoming community events, such as the Meet in the Park event and celebration of the CAC's 25th anniversary. The Southside Neighborhood Task Force has an initial e-mail list of residents/businesses it is willing to share with the refinery. Finally, MSU-B and City College students will assist with door to door distribution of the magnets and flyers before the Meet in the Park event.

REFINERY UPDATE

Ray Rigdon reported the following:

Operations: The refinery is running well and setting records every month for throughput production. Initial funding in the amount of \$35 million has been released for the new crude and vacuum improvement project which will begin construction in the fall. The total cost of the project will be about \$260 million and it will be the biggest project currently undertaken in the company. The project will add another tower and change the refinery skyline.

Safety: There have been no OSHA recordables.

Environmental: There was one reportable environmental event this year involving the H2S fuel system that has been taken care of.

Community: Ray attended a City Council meeting to be publicly thanked by the City of Billings for the refinery's philanthropic contributions to the Billings Fire Department (\$40,000) and the Billings Police Department (\$50,000). Ray stated that the refinery was proud to be supporting public safety training facilities and technology for the two departments.

Corporate: with the lower oil prices the market in general is down and storage of crude oil is backed up. Like other oil companies, Phillips 66 is being cautious in how it spends money on capital projects. The refinery is making money but not as much. Also producers in areas like the Bakken are beginning to be hit as well. Eventually, mid-East oil producers will want to see higher oil prices than \$60 a barrel to support their social and economic programs.

TRANSPORTATION UPDATE

Mark Hilbert reported the following:

Operations: Operations are running well and the pipelines are moving product at full capacity. The number of calls is beginning to rise as the weather improves. There are also projects ramping up such as construction in North Dakota near the Bakken of a rail car crude oil facility that should be in operation in September. It will accommodate up to 118 rail cars heading east to New Jersey and west to Seattle with the eventual capacity to transport 200,000 barrels. A Phillips 66 employee will manage a crew of contractors in overseeing the construction. It is a new type of project for the company. The facility will be built on a 700 acre lot and include a rail loop for the rail cars.

Safety: There was a small vehicle incident when an employee was hit. The company is investing in new technology which will equip each vehicle with smart tools to improve driving.

Environmental: No environmental incidences to report.

NEXT MEETING: SEPTEMBER 10
MEET IN PARK EVENT
SOUTHSIDE PARK - GAZEBO