

Statements of CSB Chairman John Bresland and CSB Investigations Supervisor Don Holmstrom Updating the Public on the Investigation of the Nov. 4 Explosion at the Silver Eagle Refinery in Woods Cross, Utah

November 17, 2009

Statement of Chairman Bresland:

Thank you and welcome to this U.S. Chemical Safety Board, or CSB, news conference. The CSB is an independent federal agency that investigates major chemical accidents at industrial sites. Our mission is to prevent future accidents through effective investigations, safety recommendations, outreach, and advocacy – we do not have regulatory or enforcement responsibilities.

Each year the Board deploys investigative teams to about 15 of the most serious accidents that occur anywhere in the United States, and we have 15 investigations open currently.

Of those 15 investigations, more than half involve accidents at oil refineries – even though the nation’s 150 refineries account for only a small percentage of the facilities that fall under the CSB’s investigative jurisdiction. Three of those eight refinery investigations are located right here in the Salt Lake City area.

The frequency of accidents in U.S. refineries is very troubling. These accidents cost lives, inflict serious injuries, and as we just saw here in Woods Cross, can harm communities. They also earn scrutiny from government regulators; in the past few weeks a refinery in Texas drew the largest OSHA fine in history, more than \$80 million, for alleged process safety violations.

I call on all refineries to redouble their commitment to safer operations and safer communities. The current rate of accidents in refineries is not sustainable and it is not acceptable. Today, we will release some dramatic surveillance video that underscores the seriousness of the November 4th accident at the Silver Eagle refinery and its potential to cause even more harm had the circumstances been slightly different.

Earlier today, I saw first-hand some of the damage from the explosion in the residential neighborhood east of the facility. To me it was particularly important to meet with families whose lives have been disrupted by this unfortunate event.

I was struck by the seriousness of the damage, but I was also deeply impressed by the resilience of the community. As I understand, within hours of the accident, some 200 neighbors had gathered to aid one of the families that had lost the use of their home.

But as neighbors have also clearly told us, their peace of mind will not be so easily repaired as their belongings.

The CSB responded almost immediately to this latest accident at Silver Eagle. Investigators from our Denver office arrived in Woods Cross on the evening of November 4th and have been actively investigating here ever since.

On Friday, based on preliminary findings about the conditions in the refinery and in consultation with state and federal OSHA officials, I asked that the refinery shut down temporarily to correct potentially serious safety problems that had come to light.

Silver Eagle management, to its credit, responded rapidly and positively to this suggestion.

My understanding is that four of the refinery's five processing units have now been shut down, and the fifth unit will be brought down in the coming days.

This decision will obviously cost Silver Eagle some revenue in the short run, but I believe it is the right action to protect the long term interests of the company, its workforce, and the community which gives it license to operate.

Now I will ask our lead investigator, Don Holmstrom, to summarize the team's findings to date. Mr. Holmstrom?

Statement of Don Holmstrom:

Thank you Chairman Bresland.

The CSB investigative team has been active here in Woods Cross since the day of the accident. This week we are continuing our interviews, document collection, and site work.

Our investigation remains ongoing, and today I will present some of our preliminary findings. These findings are subject to further refinement as the investigation continues.

At 9:11 am on November 4, 2009, the refinery experienced a catastrophic failure of a 10-inch pipe off the bottom of a reactor in the Mobil Distillate Dewaxing Unit. You can see pictures of the pipe here on the easels. The force of the rupture has caused a section of the pipe to wrap itself around a steel support, shown here.

At the time, the unit was undergoing a special operation to regenerate the catalyst. This operation involved circulating high-pressure hydrogen gas inside the piping, at a temperature of 800 degrees Fahrenheit and a pressure of 630 pounds per square inch, or psi.

The refinery operated a surveillance video camera, which was pointed directly at the unit where the failure occurred.

Watch for the truck passing directly past the unit a few seconds before the blast. [Start video]

Here's the unit. You can see the pickup truck driving slowly past and out of view.

[Explosion]

There's a release and almost instantaneously the gas ignites in large fireball, which we estimate to be 100 feet high. The hydrogen contents of the reactor continue to be released through the pipe, which is now open and pointing directly east toward the housing subdivision next to the refinery.

The fire burns for a number of minutes while responders arrive.

[End video]

Here's the video again in slow motion – you can briefly see a white cloud, which is the hydrogen escaping the ruptured pipe, and then the very rapid ignition. An open-flame furnace near the pipe was a likely ignition source.

[End video]

There were four workers near the process unit at the time of the explosion. They were blown to the ground but were not seriously injured. Another worker had been taking readings next to the pipe that failed just 1-2 minutes before the release.

In addition there are commuter rail lines that frequently carry passengers on routes that are immediately adjacent to the refinery. Fortunately there was no train present during the blast.

Clearly this explosion had the potential to cause deaths or serious injuries had it occurred even a few moments earlier or later in the day.

The blast wave from the hydrogen explosion damaged over 100 homes, based on our investigators' survey of the neighborhood. Two of the homes were severely damaged, including one which was knocked off its foundation.

Now let me summarize what we know about the causes of the explosion.

Our investigation to date indicates that the Silver Eagle refinery was operating with a mechanical integrity program that had serious deficiencies.

The goal of a mechanical integrity program is to ensure that process equipment is fabricated from the proper materials of construction and is properly installed, monitored, and maintained to prevent failures and accidental releases.

Because of the hazardous nature of the materials in a refinery – and the high temperatures and pressures that are frequently used – a robust mechanical integrity program is essential to safe refinery operations. It is also a regulatory requirement for refineries and chemical plants under the OSHA Process Safety Management standard, enacted in 1992.

So it was a very positive development that the refinery agreed to a voluntary shut down to try to address these important issues.

Prior to May 2009, mechanical integrity inspections -- including thickness monitoring of pipes and vessels at the refinery -- were completed by a contract company hired by Silver Eagle. The refinery

later replaced this company with a second outside inspection company, which remains active at the site.

Witness evidence indicates that various thickness readings taken by the prior contractor are of questionable validity. The refinery is now in the process of revalidating those readings.

Specifically, witnesses report that in 2007 the prior contractor documented the thickness of the pipe that failed on November 4th to be nearly one-half-inch. But measurements following the accident show that the pipe thickness was only one-eighth of an inch. A likely explanation is that the 2007 thickness measurement was inaccurate. This and other recent measurements call into serious question the pipe thickness readings obtained by the prior contractor.

The evidence further indicates that a significant percentage of the pipes and vessels have no documented thickness readings at all.

Refinery managers have now acknowledged to CSB investigators that minimum thickness values for piping and equipment throughout the refinery have been miscalculated. These are the thicknesses at which the equipment must be retired from service due to the potential for failure. Specifically, the refinery has been using what are known as ultimate tensile strength values, rather than the industry-recommended stress tables.

The result of these miscalculations is that these minimum thickness values may be 3-4 times too low; some of the minimum thickness values may therefore be too low for the safe operation of the equipment. In other words, there is the potential that multiple pieces of equipment have been operating at below the required thickness for safety – and creating the potential for other serious accidents.

Our investigation continues. This week we will be focusing on developing a testing protocol to determine the exact failure mechanism of the pipe in the dewaxing unit. We will continue to update the public on the progress of our investigation.

Mr. Bresland?

Statement of Chairman Bresland:

On Wednesday of last week, the team informed me of many of these preliminary findings, which I greeted with great concern.

We immediately discussed the issues with officials from Utah OSHA, federal OSHA, and the Utah Labor Commission. All of us agreed the best course of action would be to ask the refinery to halt operations so that these serious integrity issues can be thoroughly examined.

On Friday afternoon, I spoke with the refinery manager along with the president and the chairman of the board of Silver Eagle Refining. We discussed the team's findings. Silver Eagle's response was sober and serious and reflected a concern for the company's workers and its neighbors.

Company officials told me that they agreed that the refinery should be shut down pending an examination of the integrity of the equipment.

I thank Silver Eagle for its cooperation, and I urge the company to do as comprehensive and thorough an examination as possible and make whatever repairs are necessary to assure the safety of the plant. The restarting of the plant should occur in close coordination with the relevant state and federal regulatory agencies.

In the days since the explosion on November 4th, we have heard from a great many people and gathered many documents. But none is more poignant than the words of an eight-year old girl, Anna Lindhardt, carefully printed on lined school paper and handed to one of our staff.

Anna lives directly across the rail line on the east side of the refinery. A week or two prior to November 4th, she wrote a school assignment on the topic of “My Fears.” Anna wrote: “I’m scared that the refinery behind my house might blow up again. And my whole neighborhood will have to evacuate again.”

Her fears, of course, were prophetic. A few days after the explosion she wrote another school paper. It begins: “I was at school and the Silver Eagle refinery behind my house exploded. Now my house is a mess! I was really really scared when I got home because everyone from our neighborhood was at my house.”

Now I can imagine how a young child might feel coming home and seeing large numbers of people surrounding her home, and all the troubled thoughts and fears that must have arisen.

I won’t read the entire essay but let me just say, families and neighborhoods deserve better than this. Refineries and other process plants can be operated in safe manner, without major process accidents that impact surrounding communities.

The CSB investigation will focus on understanding how a refinery could be operating – 17 years after the federal government enacted process safety regulations – without an established and effective mechanical integrity program. We will also seek to determine how residential housing came to be located in an area where it could be affected by potential refinery explosions. More broadly, we will be examining whether existing guidelines for the siting of hazardous facilities provide enough protection for residents.

Thank you for attending today’s briefing. We will be happy to answer questions from the news media; please state your name and affiliation.

###

Media contact: Dr. Daniel Horowitz, CSB Director of Public Affairs, (202) 441-6074 cell

The CSB is an independent federal agency charged with investigating industrial chemical accidents. The agency’s board members are appointed by the president and confirmed by the Senate. CSB investigations look into all aspects of chemical accidents, including physical causes such as equipment failure as well as inadequacies in regulations, industry standards, and safety management systems. Visit our website, CSB.gov.