

U.S. CHEMICAL SAFETY BOARD

+ + + + +

CHEVRON RICHMOND REFINERY FIRE

+ + + + +

PUBLIC MEETING

+ + + + +

WEDNESDAY,
JANUARY 28, 2015

+ + + + +

U.S. CHEMICAL SAFETY BOARD MEMBERS PRESENT:

RAFAEL MOURE-ERASO, Ph.D., Chairperson,
U.S. Chemical Safety Board
MANNY EHRLICH, JR., Member, U.S. Chemical
Safety Board
MARK GRIFFON, Member, U.S. Chemical Safety
Board

STAFF PRESENT:

RICHARD C. LOEB, General Counsel
DON HOLMSTROM, Director, Western Regional Office
DANIEL HOROWITZ, Managing Director of CSB

ALSO PRESENT:

CLYDE TROMBETTAS, Cal/OSHA
BILL LINDSAY, City of Richmond
RANDY SAWYER, Contra Costa County Health
Department

This transcript produced from audio provided
by the U.S. Chemical Safety Board.

CONTENTS

	PAGE
Welcome and Opening Statements	
by Chairperson Rafael Moure-Eraso	3
by Member Mark Griffon	13
by Member Manny Ehrlich	19
 CSB Findings and Recommendations	
by Mr. Don Holmstrom, Director	
Western Regional Office	21
 Board Questions	
 Panel Presentations and Discussion	
by Mr. Clyde Trombettas, Cal/OSHA	64
by Mr. Bill Lindsay, City of Richmond	71
by Mr. Randy Sawyer, Contra Costa	76
County Health Department	
 Public Comment	 90
 Board Vote on Final Report	 139
 Closing Statements and Adjournment	 148

P R O C E E D I N G S

(6:30 p.m.)

CHAIRPERSON MOURE-ERASO: Good

afternoon, everybody. I think we are ready to start. Good afternoon and welcome to this public meeting of the US Chemical Safety Board, the CSB. I am Rafael Moure-Eraso. I am the Chairperson of the Board.

Joining me today is to my right, Board Member Mark Griffon and to my left Board Member Manny Ehrlich at the end of the table. Joining us is the General Counsel of the CSB, Richard Loeb.

With me also there's a number of CSB staff members that I will be introducing and whose efforts are the ones that permitted this meeting to take place. They have facilitated to put the meeting together.

As most of you know, the CSB is an independent, non regulatory federal agency that investigates major chemical accidents at fixed facilities. That's what it says in our charter.

1 The investigations examine all aspects of
2 chemical accidents including physical causes
3 related to the equipment design as well as
4 inadequance in regulations industry standards and
5 systems, the safety management system of a given
6 location.

7 Ultimately we issue safety
8 recommendations which are specifically designed
9 to prevent similar accidents in the future in the
10 chemical sector where the accident occurred. The
11 purpose of today's meeting is for the CSB
12 investigative team to present the third and final
13 report into the 2012 fire and explosion at the
14 Chevron refinery right here in Richmond,
15 California concluding then this CSB
16 investigation.

17 As most of you know, 90 workers were
18 in danger by the explosion and fire and the
19 resulting large drifting black smoke generated
20 plume caused more then 15,000 residents of the
21 Richmond area to seek hospital treatment. The
22 CSB held two public meetings since 2012 on this

1 accident and released two investigation products.

2 Today's report is the third and final
3 installment of our investigation. The first
4 Chevron report, we call it the interim report and
5 you can read it on our website, discussed issues
6 of piping corrosion and how to prevent these
7 hazards.

8 It asked state and local authorities
9 to develop rules to encourage refineries to use
10 safer modern technologies. Our second report
11 reviewed the state and local regulatory system as
12 a whole. The Board approved this report in
13 November 2014, the second report.

14 It calls on the state to modernize its
15 regulatory system and to make sure that
16 refineries are truly reducing process risks and
17 not simply completely paperwork to meet
18 government requirements. To their great credit
19 the State of California, the Contra Costa County
20 and the City of Richmond have taken numerous
21 actions in response to the accident and the
22 recommendations of our reports.

1 We will hear more about these actions
2 later this evening during the panel discussion
3 that we are having. Recently for example, the
4 State of California Industrial Relations,
5 Department of Industrial Relations has drafted
6 extensive revisions to the rules concerning what
7 is called process safety management at
8 refineries.

9 The new regulations will require
10 employers to prevent and eliminate to the
11 greatest extent feasible health and safety risk
12 to employees. When adopted, the new process
13 safety rules together with the refinery
14 turnaround laws that the governor of California,
15 the legislators of California have just passed
16 will give California the strongest safety rules
17 for refineries in the country.

18 Today's final report has found some
19 recommendations that were not covered by the two
20 previous reports. These include analysis on the
21 Chevron organization. We look at their safety
22 culture and their emergency response

1 capabilities.

2 We also analyzed the industrial
3 standards for chemical leaks and the responses to
4 chemical leaks and we also looked at industrial
5 standards for mechanical integrity. We made
6 recommendations in the final report to the
7 American Petroleum Institute, to the American
8 Society of Mechanical Engineers, to the Contra
9 Costa County and to the Mayor and City Council of
10 Richmond.

11 I will, at this time to recognize some
12 important people from this region that have asked
13 to make a statement before us in these
14 proceedings. And at this time I would like to
15 recognize and invite Christopher Whitmore, which
16 is the Outreach Coordinator for Congressman, Mark
17 DeSaulnier from the office and he has a statement
18 to make. So, Mr. Whitmore, please.

19 MR. WHITMORE: Hello, good evening.
20 As he just stated my name is Christopher
21 Whitmore. I'm here representing Congressman Mark
22 DeSaulnier as his Outreach Coordinator for West

1 Contra Costa County.

2 Unfortunately, Congressman DeSaulnier
3 cannot be here this evening. However, I have a
4 statement that reads as follows. Having lived to
5 see my constituents die in refinery accidents it
6 is long past time to address preventable refinery
7 incidents once and for all.

8 As a Contra Costa County supervisor
9 after the Tosco tragedies resulting in the deaths
10 of five constituents, I helped to craft and
11 implement the Industrial Safety Ordinance, the
12 first of its kind nationally and with the
13 strongest safety standards in our country. I
14 support the Chemical Safety Board's investigative
15 efforts and findings regarding the August 2012
16 Richmond Chevron refinery fire.

17 I am deeply disappointed to see many
18 of the preventable issues found in the CSB's
19 latest report mirror those of earlier reports.
20 Among these findings, worker safety culture and
21 infrastructure upgrades must always be the
22 paramount priority.

1 Nineteen employees narrowly escaped
2 the most recent explosion and more than 15,000
3 community members required care related to the
4 explosion. This is unacceptable. However,
5 report findings and industries acknowledgment
6 that higher safety standards benefit all parties
7 provides new opportunities to move forward
8 jointly to improve safety standards.

9 Higher safety standards have
10 historically led to reduced incidents, higher
11 productivity, lower insurance rates for
12 refineries and better safety for workers and the
13 community. I continue to support CSB and
14 President Obama's push to implement more rigorous
15 standards that will improve the safety and
16 circumstances of workers, the community, the
17 environment and the economy.

18 Just as I authored the foremost local
19 Industrial Safety Ordinance, county and nation
20 wide as a member of the Workforce Protection
21 Subcommittee on the Congressional Education and
22 Workforce Committee, I want to thank the CSB for

1 coming back to Richmond. I hope that these
2 findings will instigate change to adopt and
3 mandate improved best practices at the national
4 level.

5 And I would just like to add before I
6 leave that if anyone here would like a copy of
7 the statement by Congressman DeSaulnier they will
8 be in the front entranceway of the chambers. So
9 thank you very much for your time.

10 (Applause)

11 CHAIRPERSON MOURE-ERASO: Thank you
12 very much, Mr. Whitmore. At this time I also
13 would like with respect to our work, our
14 investigative work in Chevron to take this
15 opportunity to thank the workers at Chevron and
16 the managers who readily and voluntarily
17 cooperated with the CSB investigation.

18 Their cooperation and their interest
19 in preventing major accidents is evident in the
20 report we are presenting tonight. I am also
21 pleased that the Chevron company, his comments
22 that were filed tonight in the press release has

1 expressed agreement with most of the CSB's
2 findings and recommendations.

3 At this time allow me to cover this
4 evening's agenda. First we're going to have the
5 opening statements, my opening statement and the
6 opening statements of the Board Members. Then
7 we're going to be followed by the Director of the
8 Western Regional Office that is going to present
9 the results of the third Chevron report and final
10 report.

11 Following Mr. Holmstrom's presentation
12 the Board will be given the opportunity to ask
13 some questions to the team that conducted the
14 investigation. Following that we will hear from
15 three panelists who will discuss the state and
16 local actions related to and following the 2012
17 incident.

18 Will be here, representatives from
19 Cal/OSHA, from Contra Costa County and from the
20 City of Richmond and I will be introducing to
21 them at that time in the agenda. The panel
22 portion of the presentation will be followed by

1 questions for the Board Members and the staff to
2 the panel.

3 Then we'll have short break and
4 following that short break we would like to hear
5 public comments. There is a yellow sheet that is
6 circulating around anybody that would like to
7 have to present a shared comment should come to
8 the front and provide their comments.

9 There is a lot of people that have
10 signed, I understand. And so in recognition and
11 respect for all the people that signed I will ask
12 you that you limit your comments to three
13 minutes. So after that part of the program we
14 are going to have a, after the public comment we
15 are going to have the vote on the report, the
16 official vote on the results of the report, on
17 the recommendations.

18 And that is going to be followed by
19 the discussion of other Board meetings and then
20 adjournment. Every safety meeting has to go
21 through this statement so I have to like to tell
22 you that, to give you some safety information

1 about this room.

2 Probably all of you know there are two
3 entrances in the back and you can have an exit
4 out of these doors in the case of an emergency.
5 So there are two and two there. So that is the
6 safety information if we need to evacuate the
7 room.

8 I hope that we don't need to. I'm
9 sure we probably won't have to, but there you go.
10 Please so take notice of the exits and I also
11 have to ask to please mute your cell phones so
12 that the proceedings might not be disturbed.

13 I now would like to recognize my
14 fellow Board Members for opening statements.
15 First I am going to ask Mr. Mark Griffon.
16 Please, Mark.

17 MR. GRIFFON: Thank you, Mr. Chairman.
18 I'm glad to be back in Richmond with our final
19 report. I look forward to the presentation by
20 the staff and I'm hopeful that the findings and
21 recommendations in the report will be helpful in
22 improving safety at the Chevron site as well as

1 other refineries in California and nationwide.

2 This investigation has in many ways
3 been a catalyst for a national dialogue on the
4 need for reform in process safety. Other
5 activities including the President's Executive
6 Order 13650 calling on OSHA and EPA to consider
7 whether process safety regulatory reform was
8 needed and the subsequent request for information
9 by OSHA and the EPA on the process safety
10 management and risk management planning
11 standards, have also been instrumental in
12 bringing attention to this issue at the national
13 level.

14 While this meeting is focused on our
15 third and final report on the August 2012 Chevron
16 incident, I want to take this opportunity to
17 discuss our second report, the regulatory report
18 which was approved, as the Chairman said, through
19 a written vote for the Board, of the Board on
20 November 5, 2014.

21 This report made recommendations for
22 improvements to the current process safety

1 management regulations in the State of
2 California, Contra Costa County and the City of
3 Richmond. Tonight we are going to hear from the
4 panelists from Cal/OSHA, Contra Costa County and
5 the City of Richmond about some of the progress
6 that's being made.

7 I look forward to hearing from this
8 panel. The report also discusses other
9 regulatory approaches in use around the world for
10 regulating high hazard facilities. I continue to
11 have great interest in the alternative approaches
12 as they may pertain to California or to the
13 national regulatory reform.

14 I hope these models will be further
15 examined as the need for improvements to OSHA's
16 PSM standard are being considered. In particular
17 I would like to draw your attention to Section 7
18 of the CSB Regulatory Report. In this section
19 titled Process Safety Management Reform at the
20 Federal Level, a Path Forward, the CSB commits to
21 holding a public hearing to discuss the need for
22 process safety management regulatory reform at

1 the federal level.

2 The meeting will be held in the spring
3 of this year and will include discussion of
4 various models for high hazard facility safety
5 regulation from around the US and the world,
6 including consideration of safety case type
7 models. Those participating in the hearing will
8 be asked to address some of the questions,
9 concerns and challenges to implementation that
10 were raised by the Board during the January 2014
11 meeting here in Richmond.

12 I urge you all to watch for this
13 meeting and if possible to participate. Let me
14 now turn to the final report which is the focus
15 of tonight's meeting. When this incident first
16 occurred many of us raised questions about
17 possible organizational failures that may have
18 contributed to the August 2012 incident.

19 I am glad that this report examines
20 some of these questions. As Congressman George
21 Miller said in his remarks in April 2013 Board
22 meeting, "Chevron has pointed to its operational

1 excellence program as the cornerstone of its
2 safety culture. It has found that on two key
3 principles, one", and he's quoting Chevron, do it
4 safety or not at all.

5 And the second one "there is always
6 time to do it right." What happened to these
7 principles? Congressman Miller went on to ask
8 how did the management of a highly sophisticated
9 corporation lack the ability to connect the
10 expertise of its physical material scientists
11 located right in Richmond with the practices of
12 its business units operating 300 yards away in its
13 refinery?

14 Was there an organizational failure?
15 Why was Chevron's inspection team's advice to
16 replace the piping overridden during the 2011
17 refinery turnaround? Was the decision not to
18 replace this piping driven by budget
19 considerations?

20 And I would just add to those why did
21 Chevron attempt to deal with a leak while the
22 unit was running rather than shutting down the

1 unit to do the necessary maintenance? How was
2 this decision made?

3 To me these are some of the most
4 important questions of this incident that needed
5 to be answered to understand how this incident
6 could have occurred. I look forward to hearing
7 from the staff tonight about these questions of
8 possible organizational failures and questions of
9 Chevron's safety culture.

10 I also look forward to gaining a
11 better understanding of the response to the leak
12 and eventual fire. Why wasn't the unit shut
13 down? Were emergency responders aware of the
14 hazards they faced? Why were so many people in
15 close proximity to the leak when the fire
16 started?

17 Was the notice to the community
18 effective? Was air monitoring adequate and are
19 the appropriate systems in place to provide the
20 community with the information about these
21 releases?

22 I hope the findings and

1 recommendations made in this final report are
2 useful in improving safety at the Richmond
3 facility and where applicable at refineries
4 nationwide and improved safety for the workers
5 and for the surrounding communities. Thank you
6 very much.

7 CHAIRPERSON MOURE-ERASO: Thank you,
8 Mr. Griffon. Mr. Ehrlich?

9 MR. EHRLICH: Mr. Chairman, thank you.
10 Good evening, ladies and gentlemen. Thank you
11 for having us out here. This is my first trip to
12 Richmond and obviously I wasn't in attendance at
13 the first two meetings or been involved in the
14 investigation to this point.

15 I think you'll find that the team that
16 did the investigation has done an outstanding job
17 and I think my role on this board is to be able
18 to take the lessons learned from an incident like
19 this, no matter how difficult they are, and help
20 apply them across the chemical industry so that
21 the same thing doesn't happen in other locations.
22 Thank you very much.

1 CHAIRPERSON MOURE-ERASO: Thank you,
2 Mr. Ehrlich. Moving with the agenda I would like
3 to introduce the Chemical Safety Board Managing
4 Director that is going to continue with the next
5 item of the agenda. Dr. Horowitz, please.

6 DR. HOROWITZ: Thank you, Mr.
7 Chairman. Tonight the CSB's Western Regional
8 Office Director, Donald Holmstrom will be
9 presenting the findings from the final
10 investigation report on the Chevron Richmond
11 refinery incident.

12 The CSB's Chevron investigation team,
13 which consists of Team Lead, Dan Tillema and
14 Investigators Lauren Grim, Amanda Johnson, Mark
15 Wingard and Steve Cutcheon would have liked to
16 have been here tonight to present their findings
17 but much of that team has unfortunately been
18 deployed to Texas since November to investigate
19 the serious toxic gas incident that resulted in
20 four fatalities at the DuPort La Porte facility
21 near Houston.

22 However, Don Holmstrom who is the

1 leader of that team will be presenting their
2 findings tonight and summarizing them for your
3 consideration and asking for your questions and
4 ultimately for your approval for the draft
5 report.

6 And Mr. Holmstrom is one of our most
7 experienced investigators, led the BP Texas City
8 investigation for the Board, clean energy
9 investigation, deep water investigation and many
10 others that have been recognized over the years.
11 So, Mr. Holmstrom, please proceed.

12 MR. HOLMSTROM: Thank you very much,
13 Daniel. I will be presenting the key findings
14 from our third and final investigation report on
15 the Chevron incident. These findings deal
16 primarily with organizational issues, industry
17 standards, emergency response.

18 I will begin the presentation by
19 sharing our key findings from the draft report
20 followed by our proposed recommendations.
21 Following the presentation the Board will have
22 the opportunity to ask questions regarding the

1 final draft report.

2 A panel of regulatory representatives
3 from Cal/OSHA, Contra Costa County and the City
4 of Richmond will then provide updates on their
5 organizations activities in response to the
6 Chevron incident. Following those statements
7 there will be an opportunity for members of the
8 public to speak.

9 Finally the Board will vote on
10 adopting the final report and the
11 recommendations. On August 6, 2012, the Chevron
12 refinery in Richmond, California experienced a
13 catastrophic pipe rupture of the 4-sidecut piping
14 in the crude unit.

15 The CSB determined that 19 Chevron
16 employees were engulfed in a vapor cloud formed
17 by the hydrocarbon release and narrowly escaped
18 serious injuries or death. In addition, 15,000
19 members of this community sought medical
20 treatment.

21 We found that the immediate cause of
22 this incident was sulfidation corrosion, a common

1 damage mechanism in refineries. To date the CSB
2 has released two investigation reports on this
3 incident. The first report released in April of
4 2013 assigned the need for California to require
5 inherently safer design, rigorous and documented
6 damage mechanism hazard reviews and thorough
7 analysis of the process safeguards.

8 In this report the CSB made
9 recommendations to Chevron, the City of Richmond,
10 Contra Costa County, the State of California and
11 the US Environmental Protection Agency. The
12 second report, CSB's regulatory report was
13 adopted in October of 2014 and discussed the
14 continuing trend of significant and deadly
15 incidents at petroleum refineries in the US
16 during the last decade.

17 In this report the CSB identified the
18 following shortcomings with process safety
19 regulations in both the US and California. The
20 CSB determined that neither the US or California
21 process safety regulations effectively
22 established goals to prevent incidents or reduce

1 risk.

2 The regulations are static, unable to
3 adopt innovation, newly defined hazards or
4 technical advances. They do not require the use
5 or implementation of inherently safer systems or
6 the hierarchy of controls.

7 Finally, they do not ensure continuous
8 process safety improvements. As a result, the
9 CSB made a recommendation to the State of
10 California to enhance and restructure its process
11 safety management regulations for petroleum
12 refineries with more robust risk reduction
13 requirements.

14 I will present our key findings and
15 recommendations in just a few minutes. Although
16 everyone here, no doubt, is familiar with the
17 sequence of events that led to the accident we
18 think it would be helpful to first play for your
19 our video animation depicting the Chevron
20 accident time line.

21 (Video animation)

22 On August 6, 2012, the crude unit was

1 operating normally. Around 3:50 that afternoon
2 an operator was performing a routine check when
3 he noticed a small puddle on the ground near the
4 distillation tower. The liquid appeared to be
5 dripping from an eight inch insulated pipe, 14
6 feet overhead.

7 The leaking pipe was a section of the
8 tower's number 4-sidecut line, which operated at
9 a temperature of 640 degrees Fahrenheit and
10 contained light gas oil, a combustible liquid
11 similar to diesel fuel. Chevron inspectors knew
12 that over the years the walls of the number 4-
13 sidecut had thinned due to corrosion.

14 But they did not realize how close
15 this particular segment was to failure. There
16 was no shut off valve between the pipe and the
17 distillation tower and no way to isolate the
18 leak. The head operator was called to the scene.

19 Although he believed the situation was
20 serious he did not believe the small leak
21 warranted immediately shutting down the unit and
22 stopping production. Following Chevron's

1 standard practice for responding to hazardous
2 leaks, refinery firefighters were sent to the
3 scene.

4 A number of managers, engineers and
5 technicians gathered there informally to assess
6 the problem. The group discussed a
7 recommendation from an operator to shut down the
8 unit. But they decided to first try to pin point
9 the leak by removing insulation from the pipe
10 while the crude unit was still running.

11 They hoped they could stop the leak
12 with a temporary metal fitting known as a clamp.
13 A Chevron firefighter tried using a pike pole to
14 hook and pull away the insulation. But this
15 poking action was deemed too dangerous because it
16 was moving the pipe.

17 The CSB later found that the tip of
18 the pike likely caused a small puncture in the
19 already thinned pipe. As the unit continued to
20 operate workers assembled scaffolding directly
21 beneath the leaking pipe. Two firefighters then
22 used a hook to remove the insulation from the

1 pipe.

2 As they were working, hydrocarbon
3 vapor began to flow out from underneath the
4 insulation. The two firefighters backed away
5 from the growing vapor cloud as the hot vapor
6 mixed with air it ignited.

7 That fire was quickly put out and the
8 two firefighters immediately climbed down off the
9 scaffolding. But the exact location of the leak
10 was still obscured by the remaining insulation
11 and firefighting water.

12 So the Chevron firefighters attempted
13 to strip the insulation off the pipe with high
14 pressure water. But the leak suddenly worsened
15 and hot hydrocarbon liquid started to spray out
16 of the pipe.

17 A decision was finally made to begin
18 an emergency shut down of the crude unit. But it
19 was too late. Suddenly the pipe ripped open. A
20 vapor cloud formed and rapidly expanded as the
21 large inventory of hydrocarbons in the
22 distillation tower started to vent through the

1 ruptured pipe.

2 The vapor cloud immediately spread
3 over hundreds of feet engulfing all 19 people who
4 had gathered nearby. The firefighters and
5 operators struggled to escape through the dense
6 hydrocarbon cloud unable to see. They had to
7 feel their way out, some on their hands and
8 knees.

9 At approximately 6:30 p.m., two
10 minutes after the huge vapor cloud formed, the
11 hydrocarbons ignited. One firefighter was
12 trapped inside a fire engine when it was suddenly
13 engulfed in flames. He radioed for help.
14 Mayday, mayday this is 460.

15 But when he received no response he
16 assumed everyone else was dead. To escape the
17 inferno he fled through what witnesses described
18 as a wall of fire. Fortunately, all the workers
19 would eventually flee to safety and there were no
20 fatalities.

21 MR. HOLMSTROM: As an introduction to
22 the key findings of the CSB's final investigation

1 report I'll briefly review the technical findings
2 presented in the CSB's April 2013 interim report.
3 The 4-sidecut piping that failed catastrophically
4 in this incident removed approximately 640 degree
5 light gas oil from the crude distillation tower
6 flowing on average at 10,800 barrels per day.

7 The crude distillation tower is part
8 of the initial refining process taking crude oil
9 and separating it into streams for blending and
10 intermediate feed stock for other refinery
11 processes to ultimately produce motor fuels,
12 lubricants and other products.

13 The rupture of the 4-sidecut piping
14 resulted in the wall of a 52 inch component of
15 this piping being extremely thin due to a damaged
16 mechanism known as sulfidation corrosion.
17 Sulfidation corrosion causes pipe walls to
18 gradually thin over time and is common in crude
19 oil distillation where naturally occurring sulfur
20 and sulfur compounds found in crude oil feed,
21 react with steel piping and equipment.

22 The Chevron refinery 4-sidecut piping

1 was constructed of carbon steel, which corrodes
2 at a much faster rate from sulfidation than other
3 typical alternative materials of construction
4 such as higher chromium containing steels.

5 These metallurgies are referred to as
6 inherently safer metallurgies because they reduce
7 the risk presented by sulfidation corrosion.

8 This animation shown here on the slide shows a
9 pipe cross section demonstrating how the 4-
10 sidecut piping wall material, shown in gray,
11 would corrode depending on the material of
12 construction.

13 You can see how the low silicon carbon
14 steel and regular carbon steel thins
15 significantly over a 15 year time period when
16 compared to inherently safer steels such as 9-
17 Chrome and stainless steel. A high ranking
18 technique to implement inherently safer design is
19 to replace metallurgy with an upgraded,
20 inherently safer material of construction.

21 I will now review three categories of
22 key findings from the final investigation report,

1 organizational and safety culture, emergency
2 response and industry codes and standards. The
3 full text of these findings as well as an
4 analysis related to this findings can be found in
5 a draft of the final investigation report that
6 has been on the CSB website since last Thursday
7 and I believe there's a number of reports that
8 have been available to the audience here as well.

9 First, organizational and safety
10 culture key findings. The CSB found that Chevron
11 did not effectively implement internal
12 recommendations to help prevent pipe failures due
13 to sulfidation corrosion.

14 In the ten year period prior to the
15 incident a small number of Chevron personnel with
16 knowledge and understanding of sulfidation
17 corrosion recommended on several occasions either
18 a one time inspection of every component within
19 the 4-sidecut piping circuit that failed known as
20 100 percent component inspection or an upgrade of
21 the material of construction of the 4-sidecut
22 piping.

1 The recommendations were not
2 implemented effectively and the 52 inch component
3 remained in service until it failed on August 6,
4 2012. The CSB found that both during the 2007
5 and 2011 turnarounds, Richmond Refinery's
6 Turnaround Planning Group in accordance with
7 Chevron's turnaround framing document criteria
8 rejected internal recommendations to perform 100
9 percent component inspections or replace the
10 portion of the piping that ultimately failed.

11 Either of these actions had the
12 potential to prevent the August 6, 2012,
13 incident. The CSB found that the decision making
14 that took place during the August 6th incident in
15 a similar 2010 incident suggests a culture that
16 normalized continued operation of a unit despite
17 a hazardous leak.

18 During response activities on August
19 6th, Chevron firefighters were instructed to
20 remove insulation on the piping while it was
21 leaking flammable hydrocarbons placing them in
22 harms way. A similar incident occurred in April

1 2010 when a pipe was found to be leaking on a
2 high temperature jet fuel process.

3 No timely action was taken to repair
4 the leak or shut down the unit and the pipe
5 remained in operation until the leak
6 significantly worsened two days later. Finally,
7 the unit was shut down and the leak was repaired.

8 Both incidents are examples of
9 decision making that encouraged and tolerated
10 continued operation of a refinery unit despite
11 the presence of a hazardous leak. The CSB found
12 that there has been an increased reluctance among
13 Chevron Richmond refinery employees to use their
14 stop work authority.

15 Safety culture surveys conducted of
16 Chevron Richmond refinery staff in 2008 and 2010,
17 showed there was a significant increase in this
18 reluctance among operators and mechanics. This
19 may explain why no individuals used their stop
20 work authority on the day of the incident despite
21 participants reporting and CSB interviews that
22 they were not comfortable with the hazardous

1 activity taking place.

2 In these same surveys, Chevron
3 Richmond refinery employees reported increased
4 concerns with how the refinery maintained its
5 equipment. Next I'm going to talk about the
6 emergency response key findings.

7 The CSB found that the Chevron
8 incident command structure did not effectively
9 identify potential damage mechanisms that could
10 have contributed to the 4-sidecut piping leak and
11 did not identify the potential for a catastrophic
12 rupture. The incident commands lack of knowledge
13 of all potential significant causes of the leak
14 led emergency responders to take actions that may
15 have ultimately exacerbated the leak.

16 Many Chevron personnel were thus put
17 in harms way. In addition, process conditions
18 were not effectively identified and communicated
19 to incident command on the day of the incident.
20 Several Chevron fire department personnel
21 responded to the leak, were erroneously informed
22 that the operating temperature of the leaking

1 piping was only 130 degrees Fahrenheit, more than
2 500 degrees cooler than the actual temperature.

3 The CSB also found that the leak
4 response and mitigation strategy developed on the
5 day of the incident involved stripping insulation
6 from the hot piping to identify the leak
7 location. Attempts to remove the insulation
8 actually worsened the leak ultimately resulting
9 in the pipe rupture and endangerment of the lives
10 of every one responding.

11 On the day of the incident Chevron had
12 no formal leak response protocol to provide
13 guidance for operations personnel, refinery
14 management, emergency responders or the incident
15 commander to determine how to evaluate a process
16 leak that had the potential for a catastrophic
17 failure, determine a safe hot zone and remove
18 unnecessary personnel from the area.

19 Chevron had no formal system to ensure
20 that the right people were gathering the
21 necessary information before deciding on leak
22 mitigation strategies. In response to this

1 incident, Chevron has improved its internal
2 policies by developing and implementing a leak
3 response protocol for determining how to assess
4 and mitigate leaks within the refinery.

5 The new protocol would require unit
6 shut down if a similar leak were to occur in the
7 Chevron refinery. Finally, industry codes and
8 standards key findings. The CSB found that the
9 American Petroleum Institute Recommended Practice
10 939-C, Guidelines for Avoiding Sulfidation
11 Corrosion Failures in Oil Refineries does not
12 require comprehensive inspection or effective
13 facility upgrades.

14 API 939-C is a primary industry
15 guidance document on methods to monitor and
16 control sulfidation corrosion. It states that
17 carbon steel piping, if it contains low silicon
18 concentrations, can corrode due to sulfidation at
19 a faster rate than adjacent higher silicon piping
20 components.

21 However, API 939-C does not
22 specifically require users to either perform a

1 100 percent component inspection for low silicon
2 components or recommend the facilities upgrade
3 their high risk carbon steel circuits to steel
4 alloys that are more resistant to sulfidation
5 corrosion.

6 The CSB found that industry codes and
7 standards present inconsistent information about
8 carbon steel piping susceptible to sulfidation
9 corrosion. API has published various codes and
10 recommended practices, in addition to API 939-C,
11 that discuss sulfidation corrosion.

12 These include: API 570, Piping
13 Inspection Code, Inservice Inspection, Rating and
14 Repair; API 571, Damage Mechanisms Affecting
15 Fixed Equipment in the Refining Industry; API
16 574, Inspection Practices for Piping Component
17 Systems and API 578, Material Verification
18 Program for New and Existing Alloy Piping
19 Systems.

20 While these documents provide some
21 information on sulfidation corrosion, the
22 information and guidance is varied and

1 inconsistent. The CSB has also determined that
2 the language of these standards is written with
3 permissive language with no minimum requirements.

4 Finally, the CSB found that industry
5 guidance in responding to process leaks do not
6 present adequate or consistent information about
7 responding to these process leak incidents. API
8 and the American Society of Mechanical Engineers
9 have published several codes, standards and
10 recommended practices that provide information on
11 how to safely control, mitigate or respond to
12 hazardous process fluid leaks.

13 However, the guidance is permissive
14 and inconsistent failing to require safety
15 evaluation of leaks, the determination of the
16 toxicity of the leak or the worst case scenario
17 of the leak despite its potential to be
18 catastrophic.

19 And finally, the guidance does not
20 require limiting the site access around the leak
21 to essential personnel only or shut down the unit
22 which can put employees in harms way. Based on

1 our findings and analysis, the investigation team
2 proposed to the Board the following
3 recommendations.

4 I will be hitting on the highlights of
5 these recommendations and the full wording of
6 each recommendation will be on the screen.

7 First, to the American Petroleum Institute is the
8 first set of recommendations seeking to
9 strengthen industry standards relating to
10 sulfidation corrosion.

11 The CSB proposes Recommendations 23 to
12 revise API 939-C, Guidelines for Avoiding
13 Sulfidation Corrosion Failures in Oil Refineries
14 to establish minimum requirements for preventing
15 catastrophic rupture of low silicon carbon steel
16 piping.

17 The next recommendation, the CSB
18 proposes Recommendation 24 to revise API 571,
19 Damage Mechanisms Affecting Fixed Equipment in
20 the Refining Industry to increase awareness of
21 sulfidation corrosion characteristics and refer
22 users to the specific API standards that provide

1 important information to prevent catastrophic
2 rupture of low silicon carbon steel piping.

3 The CSB proposes Recommendation 28 to
4 revise API RP 2001, Fire Protection in Refineries
5 to require users to develop a process fluid leak
6 response protocol specific to their own facility
7 that must be followed when a process leak is
8 discovered. The CSB proposes that users
9 incorporate key actions into their leak response
10 protocol to effectively manage response to
11 potential sulfidation corrosion piping failure.

12 The CSB proposes Recommendation 25 to
13 API 570, Piping Inspection Code to incorporate
14 language consistent with API 939-C, increase
15 awareness of sulfidation corrosion
16 characteristics, provide additional information
17 to prevent catastrophic rupture of low silicon
18 carbon steel piping and require users to follow
19 the proposed leak response guidance in API 2001
20 Fire Protection in Refineries.

21 The CSB proposes Recommendation 26 to
22 revise API 578, Material Verification Program for

1 New and Existing Alloy Piping Systems, to require
2 users to establish and implement a program to
3 identify carbon steel piping circuits that are
4 susceptible to sulfidation corrosion and may
5 contain low silicon components.

6 The CSB proposes Recommendation 27 to
7 revise API 574, Inspection Practices for Piping
8 System Components to incorporate as a normative
9 reference API 939-C and to follow the leak
10 response protocol requirements established in API
11 2001 Fire Protection in Refineries.

12 The CSB makes the next proposed
13 recommendation to the American Society of
14 Mechanical Engineers or ASME. The CSB proposes
15 Recommendation 29 to revise ASME PCC2-2011,
16 Repair of Pressure Equipment and Piping to
17 require users to follow the minimum process fluid
18 leak response requirements established in API
19 2001 Fire Protection in Refineries, developed in
20 response to Recommendation 28, before conducting
21 process fluid leak repairs.

22 The CSB makes the following proposed

1 recommendations to the Chevron Corporation. The
2 CSB proposes Recommendation 30 to Chevron to
3 develop an accountability method to identify and
4 track effective implementation of the Chevron or
5 industry best practices to ensure process safety
6 or employee personal safety.

7 The CSB proposes Recommendation 31 to
8 develop an audible process for all recommended
9 turnaround items related to inspection or
10 mechanical integrity recommendations that are
11 denied or deferred. This process shall provide
12 the submitter of the deferred or denied
13 recommendation with a mechanism to further
14 elevate and discuss the recommendation with
15 higher management officials.

16 The CSB proposes Recommendation 32 to
17 Chevron to develop an approval process that
18 includes a technical review that must be
19 implemented prior to resetting the minimum alert
20 thickness to a lower value in the inspection
21 database.

22 The final two proposed recommendations

1 nearly identical are made to the Board of
2 Supervisors, Contra Costa County, California and
3 to the Mayor and City Council of Richmond,
4 California with the goal of continuously
5 improving process safety culture at petroleum
6 refineries in Contra Costa County.

7 To the Board of Supervisors, Contra
8 Costa County, California and the Mayor and City
9 Council City of Richmond, California, revise the
10 Industrial Safety Ordinance, ISO regulations for
11 petroleum refineries to require the development
12 of an oversight committee comprised of the
13 regulator, the company, the workforce and their
14 representatives and community representatives.

15 Among the duties of this committee
16 shall be to oversee development and
17 implementation of action items created as the
18 result of safety culture assessment findings.

19 That concludes my presentation on the CSB's final
20 investigation report on the Chevron Richmond
21 incident.

22 I will now open it up to the Board to

1 ask any questions on the draft report and
2 proposed recommendations. Thank you, Chairman
3 Moure-Eraso and Board and Daniel.

4 CHAIRPERSON MOURE-ERASO: Thank you
5 very much, Mr. Holstrom. Let me get started with
6 one question that I would like to direct to you
7 and to the team, you are speaking for the team.

8 In two of the reports that covered the
9 Chevron incident, especially in the first one and
10 in this one, in this third one, the investigators
11 report they need to look at inherently safer
12 technologies to prevent these accidents from
13 happening. And there is some reference of course
14 to the type of metal of the piping.

15 But also there is some mentioning on
16 the content of sulfur that could, is directly in
17 the crude, in the feeding stock that eventually
18 is the root of the corrosion. So my question to
19 you is, do you consider that the content of
20 sulfur and they tried to decrease the content of
21 sulfur in the feed stock could be considered also
22 an inherently safer technology to prevent this

1 type of corrosion that we experienced here?

2 MR. HOLMSTROM: Chairman Moure-Eraso,
3 the CSB in its reports has dealt with this issue
4 not only in the Chevron investigation but in a
5 prior investigation in the same county, Contra
6 Costa County in the Tosco investigation.

7 And the incident occurred in 1999
8 where there was a piping failure and a leak and
9 many of the similar issues that we're discussing
10 today, including stop work authority issues and
11 issues related to corrosion management and
12 importance of doing management of change analysis
13 in dealing with any change in the composition of
14 the feed stock.

15 In that Tosco investigation the CSB
16 pointed out a good industry practice including
17 API 750 that would require the conduct of a
18 management to change analysis if there was
19 changes in feed stock that could impact corrosion
20 in the refinery process, also if there were
21 changes in throughput or other changes such as
22 temperature, composition of corrosion products,

1 et cetera, we cited that, the importance of
2 conducting that type of analysis prior to the
3 implementation of a change.

4 And that's certainly an important part
5 of any management of change process is that
6 analysis takes place before any process changes
7 occur. In our first report, in the interim
8 report of Chevron, we in fact made
9 recommendations to California, Contra Costa
10 County and the City of Richmond addressing the
11 importance of performing inherently safer systems
12 analysis to analyze the opportunities for
13 implementing inherent safety, which includes
14 improved materials of construction that could be
15 triggered by the increase in sulfur content.

16 It could be triggered by other factors
17 that we noted in our report. We noted in our
18 report that Chevron had in fact removed a
19 stripper that was part of the process that
20 increased the sulfur content of the feed related
21 to the piping and impacted the piping in
22 question.

1 We noted that the temperature had
2 increased over time. We also noted the content
3 of sulfur had increased over time. All of those
4 factors should have led Chevron to conduct some
5 sort of management of change review and
6 implemented in that process an inherently safer
7 systems analysis.

8 So we included in our recommendation
9 to, I believe it was R7, to 678, to several
10 parties that inherently safer systems analysis be
11 performed prior to the change and include a
12 review of the factors I just mentioned and that
13 it be triggered by things like construction of
14 new process, process unit rebuilds, significant
15 process repairs, and the development of
16 corrective actions from incident investigations.

17 So that was intended to be conducted,
18 that type of analysis, in the conduct of a
19 management of change. So if there is a change in
20 sulfur content, if the type of crude is
21 different, if there is more hydrogen sulfide in
22 the crude because of change in equipment, if the

1 temperature of the crude changes these are
2 factors that all can effect sulfidation
3 corrosion.

4 Increased throughput, increased flow,
5 those are things that should trigger some sort of
6 management change analysis that should rigorously
7 look at the alternatives for implementing some
8 sort of inherently safer systems analysis.

9 CHAIRPERSON MOURE-ERASO: Thank you,
10 Mr. Holmstrom. Now I would like to ask Board
11 Member, Manny Ehrlich, if he has some comments or
12 questions.

13 MR. EHRLICH: Thank you, Mr. Chairman.
14 I really have more of a comment than a question.
15 And this comment comes from the fact that I have
16 about 25 years of experience in the private
17 sector in emergency response.

18 But you mentioned in the report that
19 a number of individuals were concerned about
20 using the stop work procedure during this
21 emergency. And you also mentioned that the
22 incident command structure didn't appear to be

1 fully developed.

2 Had it been fully developed there
3 would have been another mechanism in the command
4 structure where the safety officer has
5 responsibility for terminating an operation in
6 the event of an emergency and in the event that
7 the coworkers or the workers feel that they are
8 at unacceptable risk.

9 And had that happened it may not have
10 done very much to stop the leak, obviously. But
11 what it would have done is it would have caused
12 all of the personnel to be evacuated from the
13 area and not involved in this type of disaster.
14 Thank you.

15 CHAIRPERSON MOURE-ERASO: Thank you,
16 Mr. Ehrlich. Mr. Griffon.

17 MR. GRIFFON: Thank you, Mr. Chairman.
18 Yes, I have a few questions for the team, the
19 team of one. First of all does Chevron have a
20 poor safety culture?

21 MR. HOLMSTROM: Mark, I think the way
22 we approach this is to identify specific

1 opportunities for improvement in the safety
2 culture at the Chevron refinery and I think that
3 some of those specific opportunities that we
4 identify in the report we had touched on them in
5 our presentation.

6 And to go, if I may, a little more
7 deeply into some of those items. We talked about
8 what we call normalization of deviance. And we
9 noted that there was at least a couple of other
10 incidents that involved deciding to continue to
11 operate the plant even though there was a
12 hazardous leak that was present.

13 And the decision making about whether
14 or not to shut down a unit or keep things running
15 is a very fundamental decision and involves
16 management accountability. In the first volume
17 of the Center for Chemical Process Safety, CCPS,
18 they wrote on technical aspects of process
19 safety.

20 Their first element was management
21 accountability and it talked very specifically
22 about the importance of dealing with the tension

1 between production and safety and that management
2 has to exercise important oversight over, putting
3 safety above continuity of operations and making
4 sure there is protection of people.

5 And so what we found in the safety
6 culture surveys is there was concern about
7 utilizing stop work authority. We go into a
8 discussion about stop work authority
9 historically.

10 And again, this is an issue that the
11 CSB has quite a bit of experience with. It goes,
12 one of the cases it goes back again to the Tosco
13 in the 1999 Tosco incident where we specifically
14 identified the importance of having that ability
15 to stop work and some of the things that inhibit
16 that ability to exercise stop work authority.

17 For example, the power relationship
18 between management and workers and often the,
19 exercising the ability of stop work is to take a
20 position that's different than management. And
21 so an environment has to be created that
22 encourages stop work authority and there are

1 strong provisions that allow it to take place and
2 where workers can exercise it without fear of any
3 kind of retribution or consequences.

4 And those are things that we pointed
5 out in that report way back in 1999 and I think
6 those are factors that are currently at play in
7 this, in our analysis of this incident. The two
8 other things we mentioned, and again looking at
9 the safety culture surveys from 2008, 2010 and
10 the current incident, were the issues of concerns
11 about fixing things, mechanical integrity,
12 repairs being conducted.

13 And one of the things that we cited
14 that managers and engineers had a declining, from
15 2008 to 2010, confidence of, that anyone had, you
16 know, the ability to stop unsafe activity and
17 also the plant as a whole had, you know, also
18 concerns in those surveys about, you know, things
19 being repaired.

20 There were similar findings in the
21 report about process safety issues being
22 completed, like incident investigations and

1 lessons learned being implemented. And so for us
2 those were concrete, in addition to our
3 interviews out of the 2012 incident, those were
4 additional survey results where additional
5 findings we thought were important.

6 MR. GRIFFON: And just to follow up on
7 that, I think I know the answer to this, but the
8 focus was mainly on the Richmond refinery? You
9 didn't look at Chevron corporate wide?

10 MR. HOLMSTROM: No, we did not. I
11 mean one example of how the CSB has looked at the
12 corporation from one of our recommendations, the
13 CSB recommended in the BP Texas City incident to
14 form what was called the James Baker III Safety
15 Culture Review which led to the Baker report,
16 which looked at all the BP refineries in the
17 United States and had a number of very
18 significant findings on how to improve process
19 safety culture in the refining sector.

20 We did not do that kind of analysis
21 where we looked at a number of Chevron
22 refineries. But I would note that a number of

1 the specific organizational findings that we
2 talked about in this report also involved
3 programs from Chevron corporate, the (inaudible)
4 and some of the other issues that we discussed
5 where the plant had been notified about the
6 failure to implement the ETC recommendations on
7 sulfidation corrosion including 100 percent
8 component inspection or upgrading the metallurgy.

9 Those issues had not been implemented
10 and they involved the corporate groups
11 interacting with the plant personnel.

12 MR. GRIFFON: And let me just follow
13 up on the organizational failure which you
14 started to talk to there. I mean the report
15 detailed how various committees and work groups
16 were making recommendations regarding inspections
17 or the need for pipe replacement that were
18 basically ignored.

19 Can you tell me why these
20 recommendations were rejected? What was the
21 basis for the recommendations being rejected and
22 was cost a driving, a driver of this decision

1 making?

2 MR. HOLMSTROM: Well I think that
3 it's, one thing that's an overriding fact is that
4 any refinery needs to put a high, the highest
5 priority on safety but that cost is always an
6 issue. That's certainly true.

7 Our specific findings delve more with
8 how those decisions were made, how they were
9 played out organizationally. And I think the
10 fundamental issues that we identified, Board
11 Member Griffon, related to the importance of
12 having oversight and accountability by higher
13 level managers at the plant to ensure that the
14 right decisions were being made.

15 Ironically, in the turnaround framing
16 documents a number of these decisions were being
17 rejected based on what was perceived to be lack
18 of data or data driven decisions when in fact the
19 good practice guidelines from industry and
20 Chevron's own technical center findings and
21 recommendations were to gather more data.

22 So the decisions were being made there

1 wasn't enough data when in fact the actual
2 decision was to gather more data so that a
3 correct decision could be made about the extent
4 of sulfidation corrosion and the extent of
5 potential piping circuits that had low silicon
6 components and those could have been identified.

7 So that was actually an initiative to
8 gather more data, but based on the limited,
9 incomplete data that they had they were rejecting
10 those recommendations.

11 MR. GRIFFON: And you may have touched
12 on this in your response there. But this framing
13 document I'm interest in basically is, includes
14 the criteria by which the turnaround group makes
15 their determinations on what can be done during
16 the turnarounds versus what could be done on the
17 run, I guess for running maintenance as some
18 would refer to it.

19 And I'm wondering just, you mentioned
20 some of the problems with that. But I'm
21 wondering how is that criteria initially
22 established or how is it modified and who is

1 involved in sort of setting or establishing that
2 criteria because it seems like that's a big
3 factor in this whole thing is who makes those
4 rules on what can be done while running versus
5 what can be done, has to be done during a
6 turnaround.

7 MR. HOLMSTROM: Certainly. I think we
8 identified that as a safety culture issue first
9 and foremost. But I think we went further and
10 identified that it's very important when people,
11 rather than people making decisions based on the
12 pressures of the moment, there's often a lot of
13 stress when these leaks are occurring there's an
14 emergency response activity, that it's very
15 important for a company to have an existing
16 protocol.

17 And one of the things that Chevron did
18 do in the wake of this incident was develop a
19 leak response protocol which in fact has about a
20 half a dozen questions that it asks that lead
21 directly to making a decision to shut down the
22 unit, which includes what do we know about the

1 damage mechanisms. If you don't know whenever
2 you have a doubt you should shut down the unit.

3 That's what the current protocol
4 provides for and as we say in the report we think
5 that's an important step forward and we think
6 that there's additional items that we talk about
7 including in that process and we make a
8 recommendation for industry as a whole to develop
9 a leak response protocol that would address the
10 important decision of directly making, setting
11 forth criteria to be able to decide when to shut
12 down a process unit and make that based on a
13 criteria that are developed in the calm
14 atmosphere of planning and process review as
15 opposed to making decisions in an emergency that
16 don't have the benefit of that thinking.

17 And one of the most important things
18 is to have the right technical information in
19 front of you and have those, that technical
20 expertise available so that you can assess the
21 full scope of the potential catastrophic impact
22 of a potential leak. There's several types of

1 damage mechanisms in refinery processes that
2 could lead to sooner than later a catastrophic
3 failure and sulfidation corrosion is one of
4 those.

5 And if that information had been
6 available to those who were making the decision,
7 we believe that it would likely have led to the
8 decision to shut down the unit much more quickly.

9 In fact, the same circuit that was 12
10 inches in diameter, it was subject to the same
11 process feed, it was subject to the same
12 material, was replaced in the 2011 turnaround.

13 And these facts as they accumulate are pretty
14 overwhelming evidence that sulfidation corrosion
15 should have been considered and brought to the
16 attention of the incident commander and others so
17 that correct decisions could have been made to
18 limit the nonessential people in the area, create
19 a much larger hot zone.

20 You know, while these are insights
21 that are gained, you know, from, you know, after
22 the incidents, it's important that these lessons

1 be spread throughout the industry. So we've made
2 a recommendation to API in their Firefighting
3 Refinery Recommended Practice 2001 to incorporate
4 these process leak protocols in that approach.

5 MR. GRIFFON: And last question, I
6 promise. In the report Figure 25 I think is very
7 informative. It has a, it shows a, for lack of a
8 better term, a spaghetti diagram of all the
9 various committees and work groups that were
10 making these recommendations and where they
11 reported to in the organizational chart.

12 And it's, well I'll just ask, it seems
13 to me that a lot of these were made at the lower
14 or middle level and was plant management aware or
15 notified of these technical recommendations and,
16 you know, do we think that's a flaw in their
17 system?

18 MR. HOLMSTROM: I think in a couple of
19 the examples that we give in the report there
20 were plant managers that were involved in that
21 decision making. But for the most part a lot of
22 the folks involved were at lower levels of the

1 organization.

2 I think the point we're making is
3 somebody at a higher level on the organization
4 has to have oversight and accountability for
5 making these decisions and be held accountable to
6 make sure, for example, that the ETC Guidelines
7 on sulfidation corrosion which could have helped
8 prevent this incident, are implemented in the
9 refinery and not rejected, for example, in the
10 turnaround framing document meetings where items
11 are being rejected from being worked on during a
12 turnaround.

13 We think that somebody has to have
14 overall accountability and oversight over that
15 process and we make recommendations to Chevron to
16 make sure that occurs.

17 MR. GRIFFON: And just the last follow
18 up in regard to that. The organizational, the
19 detailed organizational chart that I, that we
20 have in our files has a PSM/OE unit in the
21 organization. And I'm pretty sure I'm right
22 about this.

1 But I think none of the PSM people
2 were really involved on any of these referring or
3 recommending committees, although they obviously
4 had, you know, very talented technical people,
5 metallurgists, et cetera. I'm wondering if the
6 PSM group should have been integrated in this
7 process somehow and well I'll leave it at that.

8 MR. HOLMSTROM: Do you want me to
9 respond?

10 MR. GRIFFON: Yes. Should they have
11 been, yes?

12 MR. HOLMSTROM: I mean arguably
13 mechanical integrity is an element of PSM and
14 folks who have that technical expertise.
15 Certainly there should be people, we believe,
16 that would include the management oversight
17 element who make sure that those voices are being
18 heard.

19 And we previously recommended in the
20 BP Texas City report that process safety have a
21 direct voice to the higher level, not only
22 managers in a facility, but to the higher level

1 corporate officials so that process safety advice
2 and process safety thinking does not, is not only
3 interjected at a low level in the organization
4 but becomes one of the most important voices in
5 decision making throughout the organization.

6 MR. GRIFFON: Thank you, Mr. Chairman.
7 Thank you, Mr. Holmstrom.

8 CHAIRPERSON MOURE-ERASO: We'll
9 continue immediately with the agenda. I would
10 like to call for, we call it a Regulatory Panel
11 that is going to discuss the actions that have
12 been taken in response to this particular
13 incident.

14 I would like to invite to this desk
15 over here, Mr. Clyde Trombettas, the District
16 Manager of Cal/OSHA for the Process Safety
17 Management Unit. You have to look out for your
18 name from there and sit behind that.

19 All right. I would like to invite
20 Randy Sawyer, the Director of Hazardous Materials
21 Program of the Contra Costa County, Randy. And
22 also Mr. Bill Lindsay, the City Manager for the

1 City of Richmond, California.

2 So I believe you have statements. I
3 will start with Mr. Trombettas, please.

4 MR. TROMBETTAS: Thank you. Honorable
5 Moure-Eraso, Board Members and staff, thank you
6 for the opportunity to participate in this public
7 meeting addressing the Chemical Safety Board's
8 final report on the Chevron fire of August 6,
9 2012.

10 My name is Clyde Trombettas. I'm the
11 district manager for Cal/OSHA's statewide Process
12 Safety Management Unit. Following a serious fire
13 at the Chevron Richmond refinery on August 6,
14 2012, Governor Brown formed an interagency
15 working group to examine ways to improve public
16 and worker safety through enhanced oversight of
17 refineries.

18 The report by the governor's
19 interagency working group on refinery safety
20 issued in February 2014 raised concerns about the
21 safety of the state's petroleum refineries.

22 The report called for the

1 establishment of an interagency refinery task
2 force to include but not limited to, coordinate
3 revisions to the state's refinery safety
4 regulations, known as process safety management
5 and the California Accidental Release Program or
6 CALARP regulations, strengthen regulatory
7 enforcement and improve coordination between
8 refineries.

9 In 2014, DIR convened and participated
10 in over 20 stakeholder meetings with the
11 petroleum refinery industry pertaining to process
12 safety, refinery workers, community based
13 organizations and the public. At each of these
14 meetings DIR presented the findings, the
15 recommendations of the governor's report and
16 described DIR's proposed revisions to the PSM
17 standard to refineries for discussion and
18 feedback.

19 Three of these meetings consisted of
20 DIR's PSM Advisory Committee made up of invited
21 representatives from labor and industry. All
22 Advisory Committee meetings were open to members

1 of the public.

2 Proposed changes to the PSM standard
3 include but not limited to the following. One,
4 hierarchy of hazard controls. Two, safety
5 culture assessments. Three, damage mechanism
6 hazard reviews. Four, root cause analysis after
7 significant accident or releases.

8 Five, explicitly accounting for human
9 factors. Six, requiring structured methods to
10 ensure effectiveness of safeguards. And seven,
11 most importantly, employee participation in all
12 elements of the PSM standard.

13 DIR and Cal/OSHA are working toward
14 submitting the proposed PSM regulations to the
15 Occupational Safety and Health Standards Board
16 this year along with an economic analysis of
17 those changes to the Occupational Safety and
18 Health Standards Board. This will initiate the
19 process of formal rule making and public comment.

20 After the Standards Board adopts the
21 proposed changes the new standard for refineries
22 will be submitted to the Office of Administrative

1 Law for approval. It is anticipated that the
2 revised PSM standard will go into effect in 2016.

3 A new assessment on the state's oil
4 refineries implemented by DIR in 2013 or the
5 Department of Industrial Relations, requires
6 refineries to provide funding support to DIR for
7 Cal/OSHA's PSM refinery program. The assessment
8 is based on the number of barrels of oil
9 processed each year as a percentage of the
10 state's total.

11 These funds, which are independent of
12 the state's general fund, have allowed DIR to
13 expand the staffing of the PSM Unit from ten
14 personnel in 2012 to 27 today. Among the newly
15 hired staff that the new funding has allowed the
16 PSM Unit to hire are nine new compliance officers
17 with either chemical or mechanical engineering
18 degrees and support the PSM Unit's training
19 program.

20 Before conducting a PSM inspection all
21 newly hired compliance officers receive 15 weeks
22 of intensive, technical and field training which

1 provides 600 hours of training to each compliance
2 officer. Prior to 2013, inspection of the
3 state's petroleum refineries was limited by time
4 and resource constraints.

5 In most cases a single compliance
6 officer conducted two to three planned refinery
7 inspections per year in addition to responding to
8 complaints, accidents and referrals. Planned
9 inspections typically focused on one element of
10 the PSM standard, such as operating procedures
11 usually in a single unit of the refinery.

12 The inspection required about 80 hours
13 over two weeks to complete. By contrast in 2014,
14 thanks to the presence of more compliance
15 officers, the PSM Unit conducted significantly
16 more inspections and these inspections were far
17 more thorough.

18 In total the PSM Unit conducted six
19 refinery inspections, two of which were planned
20 program quality verification inspections and
21 averaged 1,530 hours for each refinery. The
22 other four inspections were accidents which

1 averaged 306 hours each and two complaints
2 inspections averaging 802 hours each.

3 A PQV inspection is an inspection in
4 an establishment covered by the PSM regulation
5 performed by compliance personnel who have
6 successfully completed the division sponsored and
7 approved training.

8 The PQV inspections entail a
9 comprehensive evaluation of the establishment's
10 program for complying with each PSM element, the
11 quality of the establishment's program compared
12 to recognized and generally accepted good
13 engineering practices and verification of the
14 effectiveness of the establishment's program
15 implementation.

16 As a side note, in calendar year 2014
17 the PSM Unit conducted two complaint inspections
18 totaling 1,605 hours and two terms of probation
19 type inspections totaling 904 hours at the
20 Chevron refinery in Richmond. JR is taking the
21 leading in developing enhanced coordination of
22 oversight and enforcement activities of the

1 petroleum refineries with federal, state and
2 local agencies.

3 In 2014, Cal/OSHA provided a total of
4 160 hours of advanced PSM training to local
5 Certified Unified Program Agency representatives
6 or CUPA representatives which oversee the CALARP
7 program, federal EPA compliance officers and
8 Contra Costa Counties refinery inspectors in
9 their Hazardous Materials Unit.

10 In 2015, DIR is coordinating an
11 interagency enforcement working group to discuss
12 the coordination of enforcement activities,
13 including cross referrals, cross training and
14 joint or coordinated inspections and auditing.
15 The working group will also identify the
16 refineries to be targeted for inspection.

17 Lastly, the group will discuss the
18 facilitation and development of an electronic
19 information data sharing system among federal,
20 state and local agencies. The system will
21 include information about inspections, compliance
22 and enforcement activity as well as the means to

1 collect information identified in reports and a
2 process for timely flow of information between
3 regulatory agencies.

4 Lastly, I would personally like to
5 thank the CSB for its assistance and guidance in
6 this process.

7 CHAIRPERSON MOURE-ERASO: Thank you
8 very much, Mr. Trombettas. I would like to call
9 now Mr. Bill Lindsay, the City Manager of the
10 City of Richmond, California.

11 MR. LINDSAY: Thank you, Mr. Chair.
12 And I'd like to begin by thanking the Chemical
13 Safety Board for once again coming to the City of
14 Richmond and having this public meeting. I think
15 it's very important in the process and I think
16 you've shown great leadership.

17 And I did want to also thank the staff
18 for the really excellent and detailed, thorough
19 work that you did. And this has been very
20 important in our learning process. I'm here
21 representing the Richmond City Council. Mayor
22 Tom Butt can't be here this evening.

1 And I believe we may have some other
2 Council Members here this evening. Vice Mayor
3 Jael Myrick, Council Member Nat Bates, Council
4 Member Jovanka Beckles, Council Member Eduardo
5 Martinez who I believe may be here and former
6 mayor and current Council Member Gayle McLaughlin
7 who I believe is here also.

8 I also wanted to acknowledge the work
9 by our staff who I think have worked closely with
10 the CSB staff, in particular Lina Velasco, our
11 principle planner. Also here this evening is our
12 new fire chief who wasn't here during the
13 incident, Adrian Shepherd and Terry Harris our
14 fire marshal all of whom are learning from the
15 outstanding work you did.

16 In terms of the recommendations I
17 really want to let you know where it stands in
18 terms of what the city has been doing. After the
19 CSB issued its interim report a joint committee
20 which was made up of Council Members Jim Rogers
21 and Javonka Beckles, also it included County
22 Supervisors John Gioia and Federal Glover, was

1 formed to work with city and county staff to
2 develop language to address the CSB's
3 recommendations.

4 So this was over a year and a half ago
5 now. As part of the process a working group on
6 the industrial safety work, on the Industrial
7 Safety Ordinance was formed to gather input from
8 different stakeholders and to prepare a draft
9 ordinance. In July of 2014, their work on the
10 Ordinance was completed and the City Council
11 adopted amendments to the Industrial Safety
12 Ordinance.

13 And in particular the proposed
14 amendments include language that requires
15 stationary sources to perform inherently safer
16 systems analysis. And that is specifically every
17 five years for existing covered processes in the
18 development and analysis of recommended actions
19 identified in a process hazard analysis.

20 As part of a management of change
21 review whenever a major change is proposed at a
22 facility that could reasonably result in a major

1 chemical accident or release. When an incident
2 investigation report recommends a major change
3 that could reasonably result in a major chemical
4 accident or release.

5 When a root cause analysis report
6 recommends a major change that could reasonably
7 result in a major chemical accident or release
8 and during the design of new processes, process
9 units and facilities. So again, these amendments
10 that we incorporated include language that
11 requires stationary sources to perform this
12 analysis for inherently safer systems.

13 So we've tried to take that language
14 and put it into practice through our ordinance.
15 As you may know, the city's Industrial Safety
16 Ordinance is intended to conform with that of
17 Contra Costa County. In fact the Contra Costa
18 County Health Services is charged by the City's
19 ordinance as authority charged with enforcing the
20 requirements of the ISO Ordinance.

21 So we work very closely together and
22 one thing that this process allowed us to do is

1 conform our ordinance with theirs more closely so
2 that we have better administration. There were
3 some other recommendations that came out of the
4 reports, specifically participation in a joint
5 regulatory program.

6 The City has been working State's
7 Refinery Safety Task Force to host community
8 input meetings on potential regulation changes
9 and we are certainly ready to participate in this
10 joint regulatory program as soon as it's
11 established. Overall just again, goal of the
12 Chemical Safety Board as we understand it is to
13 reduce the risk of an accidental release to as
14 low as reasonably practicable or ALARP.

15 And the proposed amendments or the
16 amendments that we adopted acknowledge this goal
17 and include the language that says the purpose
18 and goal sections of the City's ISO are in
19 preventing and reducing the number, frequency and
20 severity of accidental releases in the county to
21 the greatest extent feasible.

22 And we feel that this language is

1 equivalent to and perhaps stronger language even
2 than the ALARP standard. I think with that I
3 will turn it over to Randy Sawyer who can really
4 provide more detail in terms of how this process
5 is being further implemented and how the staffing
6 is going. And again, I just want to thank you
7 very much for your work, for being here this
8 evening and for your help.

9 CHAIRPERSON MOURE-ERASO: Thank you
10 very much, Mr. Lindsay. So now I call on Mr.
11 Randy Sawyer, the Director of the Hazardous
12 Materials Program of the Contra Costa County.
13 Mr. Sawyer.

14 MR. SAWYER: Thank you, Chairman
15 Moura-Eraso and other Board Members. As Mr.
16 Lindsay mentioned we worked closely together in
17 looking at the Industrial Safety Ordinance and
18 revising it.

19 And the language is basically
20 identical between the county's and the City of
21 Richmond's Industrial Safety Ordinance. So as he
22 mentioned we addressed some of the

1 recommendations, the two recommendations that
2 looked at amending the Industrial Safety
3 Ordinance to include inherently safer systems and
4 expand on that, expand on where in the Industrial
5 Safety Ordinance more than what we had already in
6 there.

7 Also looked at doing what we call a
8 safety protection analysis or safeguard
9 protection analysis which looks at how effective
10 the safeguards are and when they look at a
11 process hazard analysis. And that's using
12 basically what is called a level of protection
13 analysis or LOPA.

14 And that is, or some equivalent that
15 is approved by our department before they could
16 use it, an equivalent method. So those, we
17 worked closely together. We had the joint
18 committee and we had a working committee. And we
19 feel like we fully adopted those two
20 recommendations.

21 The other recommendation basically
22 looking at the damage, one of the recommendations

1 is to monitor and confirm the effective
2 implementation of a damage mechanism hazard
3 reviews. It was a recommendation for Chevron to
4 perform.

5 And what we've done on that, one of
6 the things that Chevron had a project they had to
7 do an environmental impact review on is called a
8 modernization project. And they did an extensive
9 damage mechanism review for the areas that the
10 project covered, which is many different
11 processes within their refinery.

12 We sat in on some of those review
13 sessions to see that they actually, what kind of
14 process they had in place and how they were
15 implementing it. They have also looked at all
16 the piping in the refinery that could potentially
17 have sulfidation corrosion where the temperature
18 of the piping could be above 450 degrees.

19 And they've looked at all those and
20 then they have plans in place. They are
21 replacing some piping or increasing inspections
22 or anything. But they are in the process of,

1 they are, have a plan of action to address all
2 the findings they found in that review.

3 They've also, we've also, they're
4 looking at lower temperatures where sulfidation
5 could occur and they're looking at the piping at
6 this time there. We're also meeting with them
7 and making sure how they implement the findings
8 for their damage mechanism reviews and do their
9 process hazard analysis.

10 So we continue to follow that process
11 and we'll continue to follow it even through our
12 audit process and inspection process and in the
13 other meetings with the refinery. Another one is
14 to look at a joint regulatory program to share
15 information among, to different agencies
16 basically.

17 And we've been working with Cal/OSHA,
18 Cal EPA, Cal OES on how, California Office of
19 Emergency Services, on how we can share
20 information, what kind of repository there will
21 be, how we can be, maybe perform at least work
22 together on inspections and how we do stuff. As

1 Mr. Trombettas said, we worked with them on
2 following up on some items that came out of the
3 Chevron.

4 We've also done the same thing after
5 Tesoro incidents that occurred last year. So we
6 worked closely with Cal/OSHA in the past. We
7 plan to continue to do so. Some of the things
8 that we changed that really address those things
9 in Industrial Safety Ordinance for both the city
10 and the county was just as one of the purposes
11 and goals is to facilitate cooperation between
12 the industry, the county and we added some
13 agencies like the local fire departments,
14 Cal/OSHA, EPA and other agencies that may have
15 oversight of the refinery.

16 So we want to make sure we have
17 continued cooperation with them as they do their
18 work. Another section in the ordinance to even
19 expand a little bit on that, our copy of our
20 final determinations of our audits and
21 inspections we will share, which we had been
22 doing but we're expanding this.

1 We will share this with Cal/OSHA, EPA
2 and local fire departments that have oversight
3 over the stationary sources. So that's trying to
4 foster more cooperation between the different
5 agencies as we move forward.

6 In the regulatory report, your second
7 report, you made a recommendation to look at our
8 compensation system and how we can get better
9 regulatories to hire basically and to be able to
10 get the right technical experience they have.
11 Our Board of Supervisors working with the unions
12 actually was able to come up with a, some
13 compensation for them and actually they were
14 going to increase their salaries for the
15 engineers that have oversight over the Industrial
16 Safety Ordinance and the California Accidental
17 Release Prevention Program by 25 percent over the
18 next three years.

19 As of July 1, 2014, there was a 12
20 percent increase. July 1, 2015, there will be
21 another ten percent increase and then July 1,
22 2016, there will be three percent. This will

1 bring the annual salary range, your base salary
2 range between \$96,394 and \$117,168.

3 And we're in the process of trying to
4 hire more people. We still have one opening,
5 actually two openings. We're working with the
6 city. One of the recommendations that the city
7 made or one of the things they put actually in
8 their ordinance that was different from ours is
9 that there would be a full-time engineering
10 position to look at process safety issues at the
11 Chevron refinery.

12 And we're in the process of trying to
13 hire someone to fill that position. One of the
14 things that wasn't a recommendation to us, the
15 county or the city, was to look at process
16 safety, leading lagging process safety
17 performance indicators.

18 And that was a recommendation made to
19 Cal EPA which actually to state, not just EPA but
20 Department of Industrial Relations. That is
21 actually being looked at as part of the
22 regulatory package that Mr. Trombettas talked

1 about just a few minutes ago.

2 But it's something that we've already
3 put in our ordinance. We're requiring our
4 facilities to cover the Industrial Safety
5 Ordinance to actually have two sets of, type of
6 indicators. One is what we call common
7 indicators that will be public and it would be
8 consistent between all the facilities covered in
9 the Industrial Safety Ordinance.

10 And they would be, it would be on an
11 ongoing basis, on an annual basis they would give
12 us updates on where they are at. And the other
13 one was that each facility is supposed to develop
14 their own indicators that go beyond that.

15 The four indicators that we were
16 looking at is common indicators is looking at
17 past due recommendations from process hazard
18 analysis, past due recommendations, if there's
19 past due recommendations from incident
20 investigations and past due inspections for
21 piping and equipment.

22 And also the accident reports, the

1 accident, major accident reports that you get
2 through API that those would also be available,
3 that would be part of the process too. So that's
4 basically some of the things that I think we've
5 been addressing pretty thoroughly.

6 One of the things that, on the last
7 recommendation and the final report that just
8 came out our Board's put together an ad hoc
9 committee to look at the Industrial Safety
10 Ordinance after the Chevron fire. And that's
11 something we're going to be reporting back to
12 them very shortly.

13 We met with the ad hoc committee
14 earlier this week and they would like a report
15 back on how we're going to address that
16 recommendation also.

17 CHAIRPERSON MOURE-ERASO: Thank you
18 very much, Mr. Sawyer. Now I would like to give
19 opportunity to our investigative team in the
20 person of Mr. Holmstrom and of the Board to
21 address some questions to the panel.

22 So we're going to put you through a

1 little bit of an interrogation here. So I would
2 like, do you have any questions, Mr. Holmstrom,
3 for the panel?

4 MR. HOLMSTROM: Just a comment. I
5 think the actions that have been taken are really
6 exemplary and appreciate the proactive nature of
7 your actions you've taken. And I think you're
8 setting a model actually for the rest of the
9 country in terms of working together and taking
10 proactive steps to improve safety.

11 So I want to commend all three of you
12 for the steps that your respective agencies have
13 taken. Thank you.

14 CHAIRPERSON MOURE-ERASO: Thank you,
15 Mr. Holmstrom. Mr. Ehrlich, do you have any
16 questions to the panel?

17 MR. EHRLICH: No, I don't. Thank you
18 again. I echo the sentiments of Mr. Holmstrom.
19 As I said I've been an executive in the private
20 sector for a long time and I think it's
21 definitely going to prove very valuable not only
22 here but across the country as well. Thank you

1 very much.

2 CHAIRPERSON MOURE-ERASO: Thank you.
3 Mr. Griffon.

4 MR. GRIFFON: Thank you. I'm also
5 going to disappoint. I'm not going to have
6 questions. I also just want to make a comment
7 that I'm happy to hear the progress being made
8 and I'm also glad the work that the CSB has done
9 has seemed to have been a catalyst for some of
10 those improvements. So it's very, very good to
11 hear your progress. Thank you.

12 CHAIRPERSON MOURE-ERASO: I do have a
13 question. I mean of course as the Chairperson of
14 the agency I echo the feelings and the statements
15 of my colleagues about how satisfying it is to
16 see that actions happen to our recommendations
17 even proactive actions is the case here.

18 I do have a question that I think is,
19 has been an important development also here in
20 California. This goes to Mr. Trombettas and that
21 is I understand that a new regulation was passed
22 in California that relates to refinery

1 turnaround.

2 So my question is what is the nature
3 of the regulation, somehow if it at all relates
4 to PSM and your PSM efforts?

5 MR. TROMBETTAS: Yes, if I were to
6 include it in my statement it would have been
7 over five minutes. But it's actually Senate Bill
8 1300, requiring turnarounds.

9 CHAIRPERSON MOURE-ERASO: The mike.

10 MR. TROMBETTAS: Sorry about that.
11 Okay. How is that? So Senate Bill 1300 dealing
12 with refinery turnarounds. And kind of in a nut
13 shell what it does is on September 15th of every
14 year all 15 refineries in the State of California
15 are to provide Cal/OSHA or the PSM Unit with
16 their scheduled turnarounds, their turnaround
17 schedules for the following year.

18 So September 15, 2015, we would
19 receive all the turnaround schedules of all 15
20 refineries for 2016. We would, the staff would
21 review those schedules and based on a review of
22 those schedules two refineries up north and two

1 refineries down south would be picked for
2 inspection, turnaround inspection.

3 Sixty days prior to the inspection the
4 refineries, the two refineries up north and south
5 will be required to provide all the information
6 on deferred maintenance. So any maintenance that
7 was put into the turnaround schedule but say the
8 turnaround team, impact team at some facilities
9 would be called, say reject it or say they would
10 defer it past the turnaround there has to be a
11 written justification as to why.

12 And then 30 days prior to the
13 turnaround if there's any additional deferred
14 maintenance there would have to be written
15 justification. Usually say the first, I don't
16 like to pick on refineries at least the first
17 week of a turnaround because they're pretty hot
18 and heavy.

19 But you get about the second week of
20 the turnaround we would open an inspection and we
21 would review those deferred jobs or tasks and
22 really sit down if their justification, if the

1 refinery's justification is okay or not. If it's
2 not okay then it's going to open some dialogue as
3 to why it's not being conducted at the existing
4 turnaround.

5 Also it gives us the opportunity to,
6 there's another bill called Senate Bill 54 which
7 deals with maintenance contractors during
8 turnarounds, to review all out of state
9 contractors because California is unique in our
10 regulations that a lot of times we get
11 contractors coming from out of state to work in
12 refineries that do not understand or sometimes
13 even comply with our existing Title 8
14 regulations.

15 So we would be inspecting all of the
16 out of state contractors as well. It will be a
17 busy time during these turnarounds.

18 CHAIRPERSON MOURE-ERASO: It's a very
19 interesting regulation I guess. And it's a thing
20 that I believe, I hope that is being looked at
21 the national level because it's a very good tool
22 to identify problems, you know, especially around

1 turnaround operations that are so critical.

2 So thank you very much. I would like
3 to continue the agenda. In the agenda we have
4 public statements from people that have signed
5 that would like to address the Board. And but
6 before moving into that I would like for us to
7 take a break of five minutes to take a breather.
8 So five minutes break.

9 (Whereupon, the above-entitled matter
10 went off the record briefly.)

11 CHAIRPERSON MOURE-ERASO: Okay.
12 Having finished our break I guess we'll continue
13 with our agenda. I would like to call on our
14 Managing Director, Dr. Daniel Horowitz to
15 facilitate the public discussion. So, Dr.
16 Horowitz.

17 DR. HOROWITZ: Thank you, Mr.
18 Chairman. There is one yellow sheet in the back
19 of the room. If you have not yet signed up for
20 public comment you are more than welcome to do
21 so. First commenter is Chairman John Gioia of
22 the Contra Costa County Board of Supervisors.

1 MR. GIOIA: Good evening. I'm John
2 Gioia. I live in Richmond. I represent this
3 area of the Board of Supervisors and have chaired
4 this year. Let me first start by thanking the
5 Chemical Safety Board for coming back to Richmond
6 and for holding your meeting.

7 CHAIRPERSON MOURE-ERASO: Right.
8 Excuse me, but one of our Board Members they just
9 arrived. Okay, I'm sorry, go ahead.

10 MR. GIOIA: Thanks. First again, just
11 to thank the Chemical Safety Board for coming to
12 Richmond. I think it says a lot to hold your
13 vote, have the meeting, hear public input and
14 hold your vote here in our community.

15 So let me just say we greatly
16 appreciate that and I want to especially thank
17 your thoroughness, your professionalism and your
18 transparency in investigating the root causes of
19 the 2012 fire and making thoughtful
20 recommendations to the city, to the county, to
21 Chevron and to other agencies in your earlier
22 reports.

1 As you're aware, I think it's
2 important that you know we took your
3 recommendations of your previous reports
4 seriously. The City of Richmond and Contra Costa
5 County both amended our Industrial Safety
6 Ordinances to fully incorporate your recommended
7 changes to what is already the strongest local
8 Industrial Safety Ordinance in the country.

9 And as you may know, there has been
10 some consideration whether it's adopted more
11 state wide to apply to refineries in Southern
12 California. Also the city and the county
13 established an oversight committee which included
14 representatives of the community, labor and
15 public agencies to oversee the development of a
16 safety culture assessment of the Chevron
17 refinery.

18 And that assessment is currently in
19 the process of winding up. It's being conducted
20 by an independent third party that's basically
21 assessing all the safety culture aspects at the
22 refinery and it's conclusions and recommendations

1 will be released when it is completed very soon.

2 I've read through your new findings
3 and recommendations just released in your final
4 report. And again, I think you've been
5 thoughtful and I appreciate those new
6 recommendations.

7 Our Industrial Safety Ordinance ad hoc
8 committee of our Board met earlier this week.

9 We've asked Randy Sawyer, our Director of
10 Hazardous Materials to report back to our
11 Industrial Safety Ordinance Committee with
12 recommendations on how to address and look
13 forward to how to implement best your new
14 recommendations.

15 I do want to close by saying I think
16 it's important for everyone to know that your
17 extensive efforts investigating and making
18 recommendations are appreciated by the community.
19 They're appreciated by Contra Costa County and
20 your leadership of your Board and your staff has
21 been important to achieving safety improvements
22 at the refinery and improvements to our own

1 Industrial Safety Ordinance.

2 And we look forward to continuing to
3 work with you. And again, thanks for coming to
4 Richmond and helping improve safety in our
5 community, thanks.

6 CHAIRPERSON MOURE-ERASO: Thank you.

7 (Applause)

8 DR. HOROWITZ: Thank you. Next up and
9 if you've accidentally signed up here thinking you
10 were just signing up for the meeting that's fine.
11 You don't have to comment. But we have a number
12 of folks. Mary Wesley, Ms. Wesley.

13 Paul and Angie Lavelly, I believe it
14 is. And, sir, if you don't mind for the
15 transcript could you spell out your name?

16 MR. LAVELLY: Yes, it's Lavelly, L-A-V-
17 E-L-Y. Well first I would like to recognize the
18 amount of work that you did. I know that only a
19 small portion of the team that worked on this
20 could possibly be here tonight.

21 There had to be ten to 15 people who
22 worked on this report from all areas. And it is,

1 I think an excellent report. I was glad to also
2 see that you said that you felt you had gotten
3 very good cooperation from Chevron both at the
4 management level and at the employee level
5 because no report such as this could be written
6 without that cooperation, certainly if it was it
7 wouldn't be accurate.

8 The other is I have 25 or so years of
9 experience in nuclear power emergency planning
10 and planning. I was very surprised to see that
11 refineries don't have a lessons learned program
12 wherein accidents, problems, experience that
13 other refineries, other units that are similar
14 are passed on to them as an industry and
15 evaluated by an individual plant to see how it
16 affects them and what actions they need to take
17 or to assure that actions have already been
18 taken.

19 That was a very big surprise. I know
20 that nuclear power is a more regulated
21 environment. But still it appears what limited
22 research I was able to do that this specific

1 problem is an industry wide program problem.

2 It's something that occurs to these
3 pipes and it shouldn't have taken a lot of review
4 to say, wow, look at the consequences we can have
5 if this occurs. We need to make sure that we
6 don't have this problem and that we're not going
7 to have it any time in the near future.

8 The other was is that it didn't look
9 as though there was enough emphasis on the group
10 that was reviewing safety items or process items
11 to make sure that someone said you must do your
12 job. If you feel that you can't do your job you
13 must come to management and tell us what your
14 concern is and what we need to do to help you.

15 At least there needs to be a free
16 discussion why one group believes that something
17 needs to be done and another group feels that it
18 doesn't, an analysis, a careful review not in the
19 heat of the moment of a fire. But at the time
20 the decision is being made as to whether an item
21 can be postponed or perhaps not even done or
22 whether there's an alternative method to do it.

1 But there has to be the understanding,
2 not stop work, but in doing your job that if you
3 feel you're not being able to do your job you
4 have to be able to go to management, that's a
5 broad term. But you have to go to someone who
6 has the power and authority to say okay, let's
7 hear your side.

8 It will be expensive. Perhaps it's
9 going to be expensive but it's going to be a hell
10 of a lot cheaper than what occurred in that
11 accident. But that was all I had to say. Thank
12 you very much.

13 CHAIRPERSON MOURE-ERASO: Thank you.

14 DR. HOROWITZ: Thank you. Is there a
15 Carlton Jones? I notice a couple of Members of
16 the City Council have signed up here and since
17 we're their guests I suppose we ought to ask them
18 if they would like to speak. Eduardo Martinez.

19 MR. MARTINEZ: Eduardo Martinez, E-D-
20 U-A-R-D-O, M-A-R-T-I-N-E-Z, City Council Member,
21 former Planning Commissioner. And I want to
22 thank you for the thorough and exacting work that

1 you did on the Chevron fire.

2 It was very informative and helpful on
3 the Planning Commission for writing the
4 recommendations for the modernization project.
5 Unfortunately, many of the recommendations that
6 we made were disregarded and hopefully we can
7 reinstitute them at some later date.

8 I believe that your recommendations of
9 creating a safety case model is important to
10 maintain the safety of our community and
11 hopefully we can look at them again and make them
12 part of our safety program. But many, many
13 thanks for you doing the work that you've done
14 and for doing it here in Richmond. Thank you
15 very much.

16 DR. HOROWITZ: Thank you.

17 (Applause)

18 DR. HOROWITZ: Gayle McLaughlin. Nice
19 to see again, Mayor.

20 MS. MCLAUGHLIN: Nice to see you.
21 It's great to see you all again and thank you,
22 Mr. Chairman and Members of the Board and staff

1 of the CSB. We're very, very appreciative here
2 in Richmond for the really detailed work that you
3 have done and the time and effort that such a
4 reputable Board as yourselves come to Richmond
5 and give us your expertise. We really think it
6 helped enormously.

7 Every time I see the animation that
8 you put forward and it's circulated of course,
9 the internet and such, but it's so profoundly
10 both explanatory and impacting, you know. So
11 that was, that's one of the things that I think
12 has really broken it down for all of us to really
13 feel what happened and the problem and the danger
14 that so many were in, so many workers and the
15 community at large.

16 So I just want to say I support your
17 recommendations. The call for more corrosion
18 resistant metals in the piping. The call for
19 worker's rights to shut down operations during a
20 chemical leak or other dangerous operations.
21 Your call for strengthening the ISO and I am on
22 the, now on the ISO Subcommittee of the Richmond

1 City Council myself and Jovanka Beckles.

2 So I will definitely be working with
3 the county to implement the development of an
4 oversight committee as you are calling for as a
5 recommendation. And I think that is just in line
6 with what we have many kind of alliances of
7 groups, community groups and workers unions have
8 already gotten together.

9 This will formalize this and bring in
10 other parties to make sure that a true oversight
11 body is in place as per our ISO. And I also want
12 to thank you for confirming illegal management
13 decisions that nearly killed the 20, 19 workers
14 nearly 20 workers and sent more than 15,000 of
15 local residents in the area to the hospital.

16 And I want to say the other thing that
17 I think the animation brought out for me was how,
18 just the worker's lives, you know, and to use the
19 phraseology that we hear in today's world,
20 Chevron's workers lives matter. You know, they
21 matter.

22 (Applause)

1 MS. MCLAUGHLIN: They matter to me as
2 a representative of the people of Richmond and
3 they matter to our community I know as do our
4 communities lives matter as well. So I look
5 forward to being a part of implementing these
6 recommendations.

7 And one thing that the Richmond, that
8 we have at the Richmond City Council level that
9 we implemented a few years back was to make sure
10 that the principles of the precautionary
11 principle get implemented in every decision we
12 make basically meaning do no harm.

13 You know, every decision that a city
14 makes and I believe every decision that a
15 corporation makes should be given that full
16 understanding do no harm. Perhaps if that was in
17 the vision, in the thinking as well as all the
18 knowledge that you have shared with us that
19 should have been in their thinking, that
20 refinery, that unit would have been shut down and
21 the damage and the pain and the suffering and all
22 the harm that accident created, the trauma, et

1 cetera would have been avoided.

2 So again, thank you so much and we are
3 so glad you came to Richmond. Thanks.

4 CHAIRPERSON MOURE-ERASO: Thank you.

5 (Applause)

6 MR. HOROWITZ: Thank you. Next is
7 Andres Soto with CBE.

8 MR. SOTO: Good evening, Mr. Chair and
9 Members of the Board. I want to echo the
10 gratitude that we in Richmond have for you to
11 come here to hold this hearing here, to bring
12 your findings here to our community so we can
13 hear it firsthand, not filtered through the
14 media.

15 Unfortunately there isn't more media
16 here. But this is important to our community.
17 We are very clear as we demonstrated in the rally
18 out in front what's good for the workers is good
19 for the community.

20 We strongly support the worker's right
21 to stop the work when it's too dangerous and we
22 believe that really needs to be enforced, it

1 needs to be developed and cultivated because as
2 Gayle was just saying, you know, looking at that
3 animation it's really kind of ridiculous now in
4 hindsight that they would even think about
5 continuing to operate while trying to deal with a
6 leak.

7 So that and a lot of other work needs
8 to be done. Clearly the public notification
9 system fell far short. And so that's being
10 worked on. But we hope that this is a turning
11 point in the culture of the relationship between
12 Chevron and the community.

13 Of course, it's like Democracy, it's
14 going to take eternal vigilance. We're training
15 the young people now so they can be as vigilant
16 as some of us who are a little more gray haired.
17 So thank you so much for being here and
18 appreciate your work very much.

19 (Applause)

20 CHAIRPERSON MOURE-ERASO: I would like
21 to also acknowledge that Mr. Soto and his
22 organization when we finished the second

1 regulatory report they provided to all the
2 Members of the Board with a certificate of
3 recognition that we value very much and is in a
4 prominent place. Thank you for that.

5 (Applause)

6 MR. HOROWITZ: Next up and I may
7 struggle with the pronunciation a little bit is
8 Torm Nompraseurt, thank you. And could you
9 please spell your name for the transcript?

10 MR. NOMPRASEURT: Torm Nompraseurt.
11 The first name is T-O-R-M. Last name is N-O-M-P-
12 R-A-S-E-U-R-T. I'm here on behalf of the
13 (inaudible) Committee but also a couple of the
14 Asia Pacific Environmental Network leaders and
15 members that were here earlier but they had to
16 leave.

17 They want me to make sure that I thank
18 you CSB Board and the staff. You have done a
19 good work, tremendous work that you put this
20 report together. This is the third time actually
21 we mention that you came back to Richmond.

22 For me personally it's a significant

1 that you are providing to ask the community
2 because now we have a tool to say to the City
3 Council, a tool to see the supervisor and say why
4 don't you do that because they recommend it. We
5 have been screaming and yelling for 40 years.

6 I live here since 1975 before Chevron
7 got here I was still, I was here. The problem as
8 you see it always come down to Chevron to pick
9 like make money or not to make money. And they
10 don't care what the community has to do, what may
11 die or say because we've been coming to the City
12 Council for I came in here 40 years, 39 years.

13 And to supervisor also. I asked him
14 to provide the policy, provide the law that
15 Chevron has to comply. And every time they do
16 that it's always what's done. It's nothing.

17 He would right now, couldn't right
18 now, the city ordinance and the county ordinance
19 it's not satisfied the committee because Chevron
20 kept saying we're going to do this, we're going
21 to do that and they've never done it.

22 So it happened again and again. And

1 so I'm not just here to complain because it's the
2 fact of the history you already have from, you
3 know, from day one until today even after the
4 December, August 6, 2012, it still happened. A
5 couple of weeks ago we still encountered with the
6 Chevron issue.

7 What we want is really the safety
8 prevention. That is the bottom line for the
9 community and for the workers who work there.
10 The workers there are community members. They
11 have family life. They have children,
12 grandchildren just like us.

13 And we totally support them whatever
14 that they ask for Chevron should do so. And it's
15 good for them, good for us for safety. We ask
16 for safety. We don't ask nothing. It's really
17 safety prevention. Chevron can use technology
18 better technology, better training for all their
19 staff, even management.

20 They have to have training in order so
21 it doesn't say well I didn't know that. I forgot
22 about that. So it has to be training for all the

1 workers and management all the way to the top
2 management.

3 Those are something we want to see.
4 So it doesn't have any fall there. And also I
5 think it's important to cap the crude, what kind
6 of crude come in because the more dirty crude the
7 more it's going to cause problems and Chevron is
8 going to try to refine the machine and they can
9 try to run as you see earlier the allowment of
10 the, a degree of a certain level.

11 But then they put high level even
12 though between 100 to 125 degrees there is
13 tremendous different heating there. Not talking
14 about from 100 to a couple hundred different.
15 Those are the things that our members, our
16 community asks.

17 But also thank you very much for you
18 provide this report. You give us a tool to go to
19 our local and state policy maker to say that
20 these are recommendations and we want this to be
21 happening in the policy. Thank you so much.

22 (Applause)

1 MR. HOROWITZ: Thank you. Is there an
2 Elliot Hughes, Mr. Hughes? Please spell your
3 name. Three minutes please.

4 MR. HUGHES: E-L-L-I-O-T, H-U-G-H-E-S.
5 And I am on the Executive Board of the Industrial
6 Workers of the World. I'm just here to support
7 the community as well as the USW 5 and their
8 demand for a stop work authority for the union
9 workers.

10 Obviously this accident could have
11 been prevented if the worker, those workers had
12 the power to shut the refinery down at the time.
13 And as a result from that not being in place the
14 whole working class of Richmond was affected by
15 that.

16 And so, yes, I just wanted to say that
17 my union who is working on organizing the Whole
18 Foods here in Richmond as well as in the entire
19 Bay Area is going to be standing behind the USW 5
20 and the working class community of Richmond as
21 well. And thank you for your report.

22 It was very thorough and informative

1 and hopefully everybody can come together to make
2 sure that refineries here and everywhere can be
3 run safely and we can make a sustainable
4 transition. Thank you.

5 (Applause)

6 MR. HOROWITZ: Thank you. Greg
7 Karras, CBE.

8 MR. KARRAS: Thank you, Mr. Chairman,
9 Members of the Board. Greg Karras, G-R-E-G, K-A-
10 R-R-A-S. For the record, CBE agrees with your
11 staff's excellent analysis, supports all the
12 recommendations proposed and believes the report
13 isn't going to do enough to make us workers safe
14 by itself.

15 I suspect you would agree with that.
16 For one thing we need to go beyond
17 recommendations, right. I wanted to provide some
18 very specific, only slightly technical
19 perspective from this place based community where
20 we work day in, day out, year in, year out and
21 what we've seen that I think your staff would
22 have seen if you didn't get called to too many of

1 these disasters in too many parts of the world so
2 that you don't have enough time here.

3 So I'll be brief. But the punch line
4 is what we've learned and learned again from this
5 disaster is we won't be safe until we hold the
6 people who run the oil companies, top managers,
7 accountable in ways they understand as clearly as
8 they understand short-term profits.

9 They kept running the crude unit with
10 a hot leak when they should have shut it down.
11 Right, we see that almost every month with
12 planned flaring that it's not a catastrophic
13 event. It averts one. But it poisons our
14 communities.

15 And oftentimes they say to the air
16 district in writing, well, you know, we make a
17 lot of gasoline in the time that we save by just
18 dumping those gases to the flares. This is not a
19 mystery and I think I would like you to ask the
20 question along with us if it's a right of the
21 workers to shut down unsafe work then why do they
22 have to negotiate with Chevron to get that right

1 in their contract.

2 (Applause)

3 MR. KARRAS: And I would say part of
4 the reason why is that the people who you are
5 advising, our city, our county, our state, our
6 federal law makers are not holding them
7 accountable at the management level when they
8 keep doing this to us. So please join us in
9 being stronger about that.

10 That's one suggestion to go further.
11 The second one we wrote about, we testified about
12 at your interim hearing. It's just a simple fact
13 that when you have more corrosive feed stock and
14 less resistant materials you can't have an
15 inherently safer system unless you address both.

16 What happens in the communities and
17 what has happened since, as Don Holmstrom said,
18 here in full knowledge since 1999 when five
19 workers died down the way at the Tosco refinery
20 also partly a result of switching crude, is that
21 under pressure from the companies when we talk a
22 whole lot about say the materials for

1 construction and not a lot about the feed stock
2 they take that as permission to ignore that.

3 And so here today we still have this
4 situation where, you know, Chevron rebuilt in the
5 decades while that pipe that was corroding that
6 ultimately failed, they rebuilt their whole train
7 from their super critical residual extraction to
8 their TKC hydroprocessor, to their FCC unit to
9 make more gasoline from lower quality, higher
10 sulfur crude.

11 Spent a lot of money doing that.
12 Didn't replace the pipe. You know and you've
13 documented that their workers asked them to over
14 and over again for at least a decade. You should
15 know that their workers went beyond that. They
16 filed an unsafe work practice complaint with
17 Cal/OSHA and Cal/OSHA didn't act on it.

18 We went beyond that. CBE and the
19 community took them to court and actually stopped
20 them from going to even higher sulfur crude
21 because we won. We didn't get a court decision
22 that, we couldn't get as far as replacing the

1 pipes.

2 If you're stronger with us maybe we
3 will. And one last thing I want to say about
4 this, maybe two things, technically your staff
5 says all of this. You know, higher sulfur crude
6 dramatically increases sulfidation corrosion
7 rate.

8 It makes it even harder to monitor and
9 manage because you can't rely on past history
10 after the crude switch and when that rebuild gets
11 done to retool for the different quality of oil,
12 that gets locked into place.

13 So we need to get even here in
14 Richmond today and even in Contra Costa County
15 today but certainly around the country, we need
16 to get to the point where people are hearing you
17 and us when we say prove it and get the, and make
18 sure that the county staff here actually reviews
19 and approves the final inherent safety analysis
20 before that permit gets granted.

21 That's still not happening. That did
22 not happen with Chevron's project to go to three

1 percent sulfur crude. It's not going to happen
2 most likely next Tuesday at the next refinery
3 down the road that the county is making a
4 decision on.

5 It's not happening around the country.
6 So when your staff says to you look, 95 percent
7 of these refineries have, still have pipes from
8 the early 1980's that they should have replaced
9 well keep in mind that since the mid 1980's
10 they've doubled they're coking capacity. They've
11 invested billions in hydroprocessing, hydrogen
12 plants, crackers, things that go to dirtier oil.

13 And so when you can see this in the
14 official Energy Information Administration's
15 data, the average over that time sulfur content
16 has gone up just as much as it did at Chevron
17 Richmond. It went up quicker in Richmond. It's
18 almost as high on average nationwide as it was
19 when this event happened.

20 We have a ticking time bomb. We have
21 aging infrastructure with dirtier oil and you
22 should join us in saying, hey, nobody is minding

1 the store. The time to fix this is before the
2 next project gets approved. Thank you.

3 (Applause)

4 MR. HOROWITZ: Thank you. Next is Jim
5 Payne. Mr. Payne, United Steel Workers.

6 MR. PAYNE: Good evening, Mr. Chair,
7 Members of the Board, staff.

8 MR. HOROWITZ: And that is P-A-Y-N-E.

9 MR. PAYNE: P-A-Y-N-E. Thank you for
10 all the hard work you've done. We appreciate the
11 findings and recommendations that you've come up
12 with. I'm with United Steel Workers Local 5.
13 I'm the secretary treasurer there.

14 We represent workers at Chevron,
15 Tesoro and Shell in Contra Costa County. I
16 especially appreciate your finding and
17 recommendation around stop work authority.
18 That's something that is very important to us.

19 We agree with you that while all of
20 the industry says that we have absolute stop work
21 authority our members question it when it comes
22 time to actually put it in place because they get

1 second guessed and pressured not to exercise it.
2 It is so important that the workers at the
3 Chevron refinery have actually proposed including
4 it in their collective bargaining agreement,
5 absolute stop work shut down process authority.

6 And management's rational response was
7 that's management's rights and isn't willing to
8 discuss it in that context. We are hopeful that
9 your findings and recommendation will help sway
10 them to come to the right conclusion on that
11 proposal and once again we really appreciate all
12 the hard work you guys do. Thank you.

13 (Applause)

14 MR. HOROWITZ: Thank you. Next is BK
15 White, United Steel Workers. Mr. White.

16 MR. WHITE: Good evening. My name is
17 BK White. I'm the United Steel Workers Local 5
18 President. I work with Jim Payne.

19 We've, standing here in support of the
20 CSB not just in this finding but we stand with
21 you guys with the great work that you do
22 throughout our industry throughout the US and

1 also I would like to give our support to the
2 Chairman and let you know that the United Steel
3 Workers Local 5 always supports you.

4 I would also hope, we would like to
5 thank you for such a comprehensive report. We
6 worked with you guys. It was a pleasure. We
7 know what you're goal was and I believe you
8 achieved it with the root cause of the failing.

9 I hope that Chevron pays heed to your
10 findings and your emphasis on process safety
11 management and lean away from the behavior safety
12 programs that they endorse. I would also like to
13 thank and show our support for the environmental
14 groups and for the progressive leaders in the
15 community and for my workers who are here
16 tonight.

17 As you've heard them come up and speak
18 hopefully when you go back to the refinery you
19 tell them who the real people of Richmond are.
20 And I'm very proud to work in Richmond with
21 progressive politics and their willingness to
22 stand against a major corporation and fight for

1 their people. Thank you.

2 (Applause)

3 CHAIRPERSON MOURE-ERASO: Mr. White or
4 should I say Brother White, I was a member of the
5 USW and I wanted you to know that for me it means
6 a lot personally, your statement of support of
7 the Chairperson of this organization. And we
8 would like to continue working with you and doing
9 what is right for the workers of Local 5.

10 (Applause)

11 MR. HOROWITZ: Thank you. Next is
12 Eric Larsen. Mr. Larsen, no, let's try it looks
13 like Kathleen Wiber (phonetic) perhaps. I'm not
14 sure of the last name. How about Claudia
15 Citroen? Ms. Citroen.

16 MS. CITRON: C-L-A-U-D-I-A, C-I-T-R-O-
17 E-N. So I'll say the thank you first because you
18 will hear a lot more tonight still. I think for
19 me the most remarkable was just to see you smile
20 when you saw the representative of our city
21 discuss the steps they have taken.

22 And I know you received an honorary

1 plaque last time and I don't know whether you
2 know all the little things that happened besides
3 all the Chevron things so I just wanted to fill
4 you in. As part of the Chevron upgrade the city
5 at one point asked Camilla Harris to write a
6 recommendation on how the city should proceed.

7 And low and behold it went to a town
8 hall meeting and the city took the, citizens took
9 it apart and took it much further. They wouldn't
10 have done that without your legal expertise,
11 without your vocabulary, without your reasoning.
12 So keep on doing what you're doing. And on the
13 national level I see that newspapers and media
14 keeps being interested in Richmond.

15 And they keep wondering what the heck
16 is going on here and why are we in the paper and
17 how do we get everyone excited about what's
18 happening here? I hope and I wish that you from
19 your point of view also address the media and
20 tell them how you see how your work impacts
21 cities and towns, empowers cities and towns in
22 side stepping government and being very active

1 and very successful and productive in decision
2 making.

3 I find it very important because it
4 short cuts your work and the work in the cities.
5 So thank you.

6 (Applause)

7 MR. HOROWITZ: Thank you. Okay. Is
8 there a Chan V. Khan (phonetic)? Chan, no, okay.
9 How about AJ Sebenza (phonetic)? Okay, Kate
10 Sibley (phonetic), Ms. Sibley, no. Peter
11 Peterson. How about Rick Alcaraz, Mr. Alcaraz?

12 MR. ALCARAZ: Good evening. My name
13 is Rick Alcaraz. And I haven't faced Cal/OSHA in
14 a long, long time. In the 80's we did a lot, but
15 not so much lately.

16 First of all I would like to bring up
17 the NFPA 2001 which is the National Fire
18 Protection Act, and it has a lot of these so
19 called problems that we have are in it. As a
20 union steam fitter I went through a five year
21 apprenticeship and then I went to school to learn
22 purities and to learn what's in the air.

1 One of the things that you guys are
2 talking about on the wearing of the pipe which is
3 called in my language is friction laws. Whatever
4 the product is that's going through your piping
5 systems it wears down the integrity of the pipe.

6 And if it's heated it's even faster.
7 But if it's dirty such oil products, I know they
8 clean some of it before it enters the refineries
9 but at the same time they have to add solvents to
10 liquify, you guys all know about that. And that
11 doesn't help.

12 And what you have, any time that you
13 change direction in pipes you have friction laws.
14 By that I mean the integrity of the pipe, the
15 inside of the pipe not the outside. But every
16 time you change directions up and down 45 degree
17 angles back and forth or whatever, we used to put
18 flow meters in these things and they were
19 completed automated back in '88.

20 And for the life of me I look at the
21 pipe up here in the picture right up here and the
22 pipe comes in what we call 40-1-1, 40 feet one

1 inch long pipe. And the supports, I'm looking
2 for supports and they used to be there but
3 they're no longer in there.

4 As you can tell I haven't been in
5 refineries for a few years. I went into the semi
6 conductor area and stayed in it for a while. But
7 I'd also, I've been here since 1945. I was,
8 first job I had out of high school was at
9 Chevron. I started a pipe fitters apprenticeship
10 there.

11 And they were good to me and but
12 things happen. There's a lot of accidents do
13 happen around here. But, anyway, that's about
14 all I have to say tonight. If I'm wrong about
15 the automation that the flow meters should have
16 been in there or they were in there at one time,
17 you said you were looking for valves.

18 Well there was no valves. When we
19 originally put the refinery in, in the 80's we
20 started working on it and then I went out to
21 Shell in '88 and then I went to Exxon and I've
22 been around the Bay. I've made a good living at

1 my trade.

2 But if those flow meters were in there
3 they shut off automatic when the flow stops or
4 increases. It's set for one thing, the amount of
5 travel of the product. And as soon as it
6 fluctuates it shuts itself down. So thank you
7 for listening to me.

8 MR. HOROWITZ: Thank you. Dina Razor,
9 Ms. Razor. Jeff Kilbreth, is that you? Why
10 don't you step right up?

11 MR. KILBRETH: I wasn't going to say
12 anything because --

13 MR. HOROWITZ: Could you spell your
14 name though? Let me reset the timer so that you
15 get your whole time. Go ahead.

16 MR. KILBRETH: Jeff Kilbreth, K-I-L-B-
17 R-E-T-H. I just, I wasn't going to speak because
18 I think I don't have anything to add about the
19 technical matters. I've been to all of the
20 hearings and read all of the reports.

21 I did want to, I wanted to speak
22 primarily because of what a couple of the last

1 people said about what an impact you've had on
2 Richmond. And I guess I want to say two things.

3 First of all I don't think that the
4 campaign to be seriously involved in studying the
5 modernization project and your negotiating and
6 understanding and trying to actually end up with
7 a good project going forward would have happened
8 nearly as well as it did without your,
9 effectively your leadership and your clarity
10 about searching for a better way to do things.

11 And Supervisor Gioia didn't blow his
12 own horn. But I want to give you an example of
13 what a far reaching effect your report and your
14 focus on continuous improvement has had, you
15 know, beyond just issues of safety. Continuous
16 improvement is as true for emissions reduction
17 and pollution reduction as it is for safety.

18 There should be goals. There should
19 KPI's, you know, these kinds of things. And what
20 we're doing now with the Bay Area Air Quality
21 Management District is taking up questions around
22 what sort of emission reduction should we strive

1 for over the next ten years.

2 You know, you don't change things by
3 snapping your fingers. These things take time.
4 But you need goals. You need KPI's. It's like
5 safety cases and it's like so much of what you
6 said in your report.

7 And I don't think that the Bay Area
8 Air Quality Management District would be talking
9 about these refinery regulation rules right now,
10 changing them if you hadn't broken the ground.
11 So thank you from the bottom of my heart.

12 (Applause)

13 MR. HOROWITZ: Thank you, Mr.
14 Kilbreth. How about Quanah Brightman, Mr.
15 Brightman.

16 MR. BRIGHTMAN: Good evening. My name
17 is spelled Q-U-A-N-A-H, last name Brightman, B-R-
18 I-G-H-T-M-A-N. My name is of course Quanah
19 Parker Brightman as you just heard, an indigenous
20 person. Also I'm Executive Director of United
21 Native Americans.

22 I would like to, I wanted to come here

1 and of course bring voice for the indigenous
2 population whose land you're currently occupying
3 on. First and foremost, I would like to thank
4 the Members of the Board and all the people who
5 came and organized this. It was very thorough.

6 We really appreciate that as a
7 community out here. I want to thank you and
8 commend you for coming here and bringing forth
9 this information and informing our community and
10 the world.

11 But there's a number of things that
12 need to be done to further what has been shared
13 here tonight. First and foremost, I'd like to
14 remind people that there are currently 13
15 refineries here in the State of California.
16 There are five here in the greater Bay Area.

17 Now when and if another, you know,
18 catastrophic explosion happens at one of the 13
19 refineries here in California will we see those
20 responsible be brought upon charges of criminal
21 negligence and criminal genocide upon our Mother
22 Earth. Will we see that?

1 Will that be included in, will that be
2 paper clipped in your little report because quite
3 honestly until these people actually are brought
4 to justice and treated as common criminals as
5 they are for that gross negligence and
6 incompetence this is not going to stop. It's not
7 going to stop.

8 You need to realize that. This is a
9 stepping stone for us. But we need to look
10 forward. We need to build from this, all of us
11 who are here. I'd like to also bring up we must
12 act now to stop these dirty tar sands from being
13 brought in our community and refined here at any
14 and all of the refineries world wide.

15 I want to thank you for your time.
16 Thank you for allowing me to speak, (foreign
17 language).

18 MR. HOROWITZ: Thank you.

19 (Applause)

20 MR. HOROWITZ: Okay. How about Tim
21 Laidman?

22 MR. LAIDMAN: Thank you. I'm Tim

1 Laidman. I'm with the Green Party of Contra
2 Costa County on the Council there.

3 MR. HOROWITZ: And Laidman is?

4 MR. LAIDMAN: L-A-I-D-M-A-N. And
5 also on the Green Party of California State
6 Coordinating Committee. And I'm standing here in
7 solidarity with the workers of United Steel
8 Workers 5. They are the front line.

9 They are risking their lives and I
10 really appreciate the work that you have all done
11 to make their job safer, the community safer
12 because there's nothing more important than the
13 health and safety of those workers and of the
14 community.

15 The profits of Chevron, which are
16 enormous, are second to all of those. You can't
17 replace a life with a billion dollars. And
18 Chevron has a number of billions of dollars every
19 quarter. But that doesn't bring anybody back
20 that's died.

21 And the work that you've done, I think
22 can save lives. I appreciate that and I thank

1 you. I also wanted to as an engineer I wanted to
2 thank you for the technical work you've done and
3 as a political activist I would also like to
4 thank you for the political will that you've
5 shown because those corporations with their 10's
6 and 20's and 100's of billions of dollars often
7 exert political pressure and we rarely see an
8 organization, a Board, a government agency that
9 actually has the ability to stand up to that
10 pressure, that influence, that lobbying.

11 We don't see it in our Congress for
12 instance. And I appreciate that you have that
13 ability and you've done what you have done. And
14 I would also echo all the sentiments about the
15 good that it has caused here.

16 I hope that it continues on with
17 stronger Industrial Safety Ordinance. Part of
18 the Planning Commission's work was bartered away
19 by some Council people. But I think if the new
20 Council that the people elected which is full of
21 a lot more progressives will go farther and be
22 making an Industrial Safety Ordinance that gets

1 some of those lost things back and protects the
2 workers and the community.

3 Thank you for your help in this.

4 Thank you very much.

5 (Applause)

6 MR. HOROWITZ: Thank you. How about
7 Steve Nadel (phonetic), okay. How about Marie
8 Walcek.

9 MS. WALCEK: Hey. Marie Walcek. It's
10 spelled W-A-L-C-E-K. I'm with the California
11 Nurses Association. We represent nurses that
12 live and work near the refinery including at
13 Kaiser Richmond and at Doctors Medical Center.
14 Our nurses are the ones that treated and cared
15 for the 15,000 people that were sent to nearby
16 hospitals after the refinery fire in 2012.

17 And that being said, I'm very grateful
18 to hear a very thorough report talking about what
19 went wrong and how we can prevent this in the
20 future. We're at a time when West County is
21 particularly vulnerable.

22 Whether or not you're aware, Doctors

1 Medical Center which was the primary hospital
2 that was, had emergency room services nearest to
3 the refinery is now no longer accepting any
4 ambulances and is under serious threat of closure
5 which would mean the only nearby hospital would
6 be Kaiser Richmond, which unfortunately only has
7 15 emergency room beds.

8 So now is a critical time and seeing
9 folks come together to make this refinery safer
10 is good to see. I would like to uplift a lot of
11 what your report recommended, particularly
12 workers rights to stop refinery operations when
13 they sense danger and the rest of the
14 recommendations.

15 And also wanted to echo hearing, you
16 know, what some other people said that we would
17 like to see stricter regulations on the quality
18 of crude used in Bay Area refineries,
19 particularly at Chevron as nurses know what goes
20 in absolutely effects what comes out. So we'd
21 like to see that be a part of the plan moving
22 forward and I hope this is just a small step as

1 we continue vigilance in improving safety for
2 workers and the community. Thank you.

3 (Applause)

4 MR. HOROWITZ: Thank you, Ms. Walcek.
5 How about Joel Britton. Is there a Joel Britton?

6 MR. BRITTON: That's J-O-E-L, B as in
7 boy, R-I-T-T-O-N. I'm a former operator at the
8 Chevron refinery in El Segundo and the Gulf
9 Refinery in Sante Fe Springs. Proud ten plus
10 year member of the Oil, Chemical and Atomic
11 Workers Union and the Northern California
12 organizer of the Socialist Workers Party.

13 According to US government statistics
14 4,500 workers were killed in the United States on
15 the job in 2010. Our jobs can be dangerous. We
16 all know how dangerous oil refineries can be. I
17 would like to argue that refineries don't have to
18 be places where workers die on the job.

19 No worker should have to die on the
20 job if the corporate bottom lines, profits aren't
21 what dictates how refineries are built and how
22 they are maintained and operated. I believe I'm

1 going a little bit beyond your report in saying
2 these things.

3 But I believe that we need to address
4 this bigger picture. In order to work toward
5 this workers need to fight to be in charge of all
6 health and safety procedures. Managers, bosses,
7 can't be trusted as this incident at Chevron
8 Richmond has proven as the Chemical Safety Board
9 reports have documented so convincingly.

10 Stop work authority, yes, for real.
11 Workers control of conditions on the job is what
12 is needed if no worker is to die. Workers
13 control enforced by union power. The gentleman
14 over here said cost is always an issue referring
15 to dollar cost.

16 But this whole experience has
17 demonstrated, has underlined the cost in human
18 life is what must determine how refineries,
19 railroads, et cetera are operated, human lives,
20 workers lives and the lives of people in the
21 surrounding communities. We should all support
22 the United Steel Workers in its negotiations for

1 a new contract, a stronger contract with stronger
2 safety provisions including the right to shut
3 down process.

4 If that first operator who said that
5 process should be shut down had been listened to.
6 But as your report demonstrates workers fear
7 retaliation for exercising what little say they
8 are presumed to have up to this point. But we
9 need to get stronger and the only way we're going
10 to get stronger is for workers ourselves to
11 organize and lead that fight. Thank you.

12 (Applause)

13 MR. HOROWITZ: Thank you. How about
14 Jerry Freiwirth?

15 MR. FREIWIRTH: Jerry Freiwirth. J-E-
16 R-R-Y, F-R-E-I-W-I-R-T-H. And I'm a recently
17 retired operator at the Shell refinery. I'm a
18 retired member of Local 5.

19 I will say that over my 20 plus years
20 the videos and reports from the Chemical Safety
21 Board have been some of the most useful things
22 for operators to understand process and safety

1 questions. But it remains true that the
2 accidents, the fires, the explosions continue to
3 happen, not just here but Texas City and
4 Anacortes in Washington with a depressing
5 regularity.

6 And I think that goes to a little bit,
7 it turns out what some of the last speaker spoke
8 to. How do we stop this? The recommendations
9 made in this report, particularly around the 100
10 percent inspection or replacement, around stop
11 work authority are all very useful.

12 But where's the power to change the
13 drive that comes from these companies? How many
14 times have we, have refinery workers and
15 operators and maintenance people seen in
16 turnarounds where exactly what happened here
17 where things are identified as dangerous but then
18 when you get into the turnaround suddenly they
19 disappear, they are pulled off the work scope?

20 It's exactly what happened here. And
21 regulatory steps have failed repeatedly including
22 here, including with Cal/OSHA who came one year

1 was called in by workers one year before the fire
2 for almost exactly the same problem and nothing
3 was done. It was signed off of.

4 So as a refinery worker I think the
5 most important single thing I had to defend my
6 life and the life of my coworkers was my union.
7 I worked in non union situations and basically
8 you're told either do the job or there's the
9 gate.

10 At least when I had a union I could
11 have some confidence that I could stop that work.
12 I think the next step needs to be that our unions
13 need to step up collectively. We need to step up
14 because I do not believe that the regulatory
15 commissions, the state governments have the power
16 to take on the Chevrons and the Shells of this
17 world.

18 Only the people who actually do the
19 work and create the product and make the money
20 have that power. And that's, I think what is
21 posed if we can have any idea that we're going to
22 stop the deaths that occur, the dispoilization

1 (phonetic) of our communities. I'm confident
2 that will happen.

3 But that's, forgive me, but I think
4 your recommendations and, you know, as an oil
5 worker sitting here we've all listened to the
6 paragraph after paragraph at work not just here
7 of the things that no one can understand, the
8 verbiage around safety. But the real question is
9 and I'll finish up, when profits versus safety,
10 as it stands today in our world profits will
11 always win.

12 And I think that's what we need to
13 give consideration how we change that.

14 (Applause)

15 MR. HOROWITZ: Next is Alisa
16 Mescariolo (phonetic). No, okay. How about
17 Rebecca Auerbach?

18 MS. AUERBACH: Richmond Resident,
19 Rebecca Auerbach. R-E-B-E-C-C-A, A-U-E-R-B as in
20 boy, A-C-H. Now that this wonderful report has
21 brought the light of day into a company with so
22 little regard for the lives inside and outside

1 its gates that the automatic response to an
2 obvious hazard is to tell workers to go poke it
3 with a stick, I want to see the follow through.

4 It would be too easy for everybody in
5 this room to take this home and throw it in a
6 corner. And if that happens I know where we're
7 going to be in five years or in ten years or
8 whenever the next fire happens and people do die.

9 And then everybody is going to be down
10 at the coffee shop saying now what was that they
11 said in 2015 about sulfur, what was that word and
12 what were they saying about stop work something.
13 I don't want that day to come. We've had a
14 wonderful start.

15 I want to see it keep going. I call
16 on everybody in this room to follow this through
17 to the end. Thank you so much for coming to
18 Richmond. We're glad to know that we're not
19 alone here.

20 (Applause)

21 MR. HOROWITZ: Okay. Lipo Chantanasuk
22 (phonetic), not here. Is there anybody here who

1 did not sign up who would like to speak for three
2 minutes? I think that is it, Mr. Chairman.

3 CHAIRPERSON MOURE-ERASO: Thank you,
4 Dr. Horowitz. So we move on our agenda. At this
5 time we'll proceed with a vote to consider the
6 final investigation report of the Chevron
7 refinery accident.

8 I will make a motion that reads as
9 follows. I move that the Chemical Safety Board
10 approve Investigative Report Number 2012031CA
11 entitled, Chevron Richmond Refinery Pipe Rupture
12 and Fire, that occurred in August 6, 2012, in
13 Richmond, California including all findings,
14 recommendations and associated products like
15 videos continue, that are contained in this
16 January 28, 2015, report.

17 That is my motion. Do I hear a
18 second?

19 (Off microphone comment)

20 CHAIRPERSON MOURE-ERASO: I hear a
21 second. Is there any discussion among the
22 Members of the Board on the motion? So not

1 hearing any discussion I will call the question.
2 I ask the General Counsel, excuse me, record the
3 vote.

4 MR. LOEB: The question has been
5 called. Mr. Griffon?

6 MR. GRIFFON: Yes.

7 MR. LOEB: Mr. Ehrlich?

8 MR. EHRLICH: Yes.

9 MR. LOEB: Mr. Chairman?

10 CHAIRPERSON MOURE-ERASO: Yes. So --

11 (Applause)

12 CHAIRPERSON MOURE-ERASO: Okay. So
13 there are three votes. It's a unanimous vote and
14 so the report is adopted.

15 (Applause)

16 CHAIRPERSON MOURE-ERASO: As a way of
17 closing remarks on the specifics of the
18 investigation I would like to reiterate that this
19 fire, tragic as it was will, in my view, prove an
20 important milestone in industrial chemical
21 safety.

22 California authorities at all levels

1 are poised to modernize their process safety
2 rules and put this state at the forefront of the
3 nation's accident prevention efforts. To them I
4 say God speed. I also call upon federal
5 regulators to closely study the progress that is
6 underway here in California.

7 I believe it is a model for the whole
8 country to emulate and will make our communities
9 safer. I also would like to recognize and to
10 express my deeply felt thanks to the entire CSB
11 Chevron team for their tireless work on this case
12 over two and a half years.

13 I know the whole Board joins me in
14 congratulating your efforts. That concludes the
15 discussion of the Chevron investigation and now
16 pursuant to the agenda I ask if there is any
17 other business before the Board during this
18 public meeting.

19 MR. EHRLICH: Mr. Chairman, I have a
20 motion to normalize the government of the CSB,
21 governance of the CSB to approve agency
22 operations in general. Having spent an excess of

1 50 years in the private sector I look at the CSB
2 from an executive's perspective where lines of
3 authority and a command structure are known to
4 all.

5 First and perhaps foremost, is the
6 fact that the products produced by the staff are
7 outstanding and excellent. The Board continues,
8 consists of remarkably dedicated, extremely
9 bright and exceptionally committed, hard working
10 group of professionals.

11 Looking at the agency's management and
12 administration there are a number of issues that
13 require, in my mind, clarification and
14 solidification. For example, I have never worked
15 in an organization where there is no clear
16 delineation of responsibility for implementation
17 of administrative tasks.

18 In this agency's case it would seem to
19 me that the Chairperson of the Board should be
20 responsible for such administrative issues for
21 all the agency members, including the Board.
22 Complicating matters is the fact that the agency

1 adopted the majority of its internal procedures
2 or Board orders during a brief period between
3 2000 and 2002 where there was no Chairperson and
4 no permanent staff director at the agency.

5 With regard to Board orders there
6 appear to be too many, most of which deal with
7 purely administrative issues and in my opinion
8 should be eliminated. To the extent standard
9 procedures are needed for such issues as
10 contracting, budgeting and personnel these should
11 be developed by the Chairperson or his delegates
12 and updated on routine basis following government
13 norms.

14 By clearly delineating the
15 administrative issues to the chair and the
16 programmatic responsibilities to the Board then
17 delegating authority is appropriate in both areas
18 I'm of the opinion that the Board would function
19 much more smoothly and more time could be spent
20 on the mission of the agency.

21 My motion has four components. First
22 it adopts a new Board Order, Number 2015-01 that

1 rescinds numerous unnecessary, conflicting and
2 antiquated Board orders related purely to the
3 agency's administrative functioning. It
4 clarifies that administration is and always has
5 been the Chair's responsibility.

6 That is fully consistent with the
7 statute best practices of other agencies
8 including the NTSB and my philosophy of
9 management based on 50 years of private sector
10 experience. It encourages the Chair to develop a
11 modern, streamline set of management directives
12 covering administration, budgeting and personnel.

13 Second, my motion provides for
14 adopting an updated Board Order Number 22
15 establishing updated procedures for the Safety
16 Recommendations Program. This proposal was
17 developed by the staff but has been waiting at
18 the Board for resolution for more than two years.

19 Third, my motion adopts a new
20 procedure for what is called investigation
21 scoping. That is the critical process for
22 planning out how individual investigations are

1 going to be conducted and what issues are to be
2 pursued.

3 This will be a new chapter of the
4 Board's investigation protocol. Once again the
5 procedure has been proposed by staff and has been
6 sitting before the Board for a number of months.

7 Finally, my motion would
8 administratively close three very old CSB cases
9 dating from 2009 and 2010 where there is no
10 realistic opportunity to issue a CSB report.
11 These are the investigation of two accidents from
12 2009 at the Silver Eagle refinery in Utah, a
13 series of releases from the Citgo Corpus Christi
14 refinery starting in 2009 and a 2010 zinc fire at
15 the Horsehead facility in Monaca, Pennsylvania
16 which has been closed and demolished.

17 In the case of the Silver Eagle and
18 the Citgo cases the CSB has already issued
19 technical reports or recommendations that
20 establish many findings about the incidents. In
21 the case of Horsehead the CSB staff is contracted
22 with a distillation expert who has reviewed the

1 file and has prepared technical analysis which
2 should be made available to the public after
3 completion of staff reviews.

4 However, especially with both the
5 plant and the process no longer in existence it
6 would be fruitless to put more researchers into
7 the case. These are the four parts of my motion
8 and I urge that it be adopted by the Board.

9 I move the Board take the following
10 actions to improve and facilitate mission
11 operations, part one. Adopt a new Board Order
12 2015-01 entitled Streamlining of a Chemical
13 Safety Board System of Board Orders.

14 Part two, rescind the existing Board
15 Order 22 entitled CSB Recommendation Program and
16 adopt an updated version of the Board order as
17 recommended by the CSB staff. Part three, adopt
18 a new chapter one of the CSB's investigation
19 protocol, Board Order Number 40 entitled
20 Investigation Scoping Process as recommended by
21 the CSB staff.

22 And part four, terminate the following

1 CSB investigations. Investigation of the January
2 12, 2009, flash fire and November 4, 2009,
3 hydrogen explosion at the Silver Eagle refinery
4 in Woods Cross, Utah. Investigations of the July
5 19, 2009, hydrogen fluoride release and
6 hydrocarbon fire at the Citgo refinery in Corpus
7 Christi, Texas and a subsequent smaller hydrogen
8 fluoride release on March 5, 2012.

9 Investigation of the July 22, 2010,
10 zinc fire at the former Horsehead Corporation
11 facility in Monaca, Pennsylvania and authorize
12 the CSB staff to make available to the public the
13 final results of a technical review of the
14 Horsehead case file already conducted by the zinc
15 distillation expert.

16 Upon completion of appropriate factual
17 and confidential business information reviews,
18 sorry, and completion of the business information
19 reviews.

20 CHAIRPERSON MOURE-ERASO: So I hear a
21 motion. There is a motion on the floor. Is
22 there a second for this motion? I second the

1 motion. So there is a motion on the floor that
2 has been read and second. Is there any
3 discussion?

4 MR. GRIFFON: Mr. Chairman, I make a
5 motion to table this matter.

6 CHAIRPERSON MOURE-ERASO: There is a
7 second motion to table this matter. Is there a
8 second for the motion to table the matter?

9 Hearing no second I call the question
10 for the first motion. I will ask if there is any
11 further discussion on this.

12 MR. GRIFFON: Yes, I have further
13 discussion. First and foremost, we have another
14 Board Member who has been confirmed by the Senate
15 and is due to be on the Board in a few weeks.

16 And I think we're basically modifying
17 all governance practices right here live in this
18 meeting when another Board Member that's been
19 confirmed by the Senate I believe should have an
20 opportunity to speak to these very important
21 issues that affect the agency going forward for
22 some time.

1 Secondly, I've been delivered this
2 document right now. This is the first time I've
3 seen this. There is no way I can vote on this
4 matter with, fully understanding what I'm voting
5 on without some time to look this over
6 completely.

7 And finally, these governance matters
8 have been under discussion on the Board and great
9 debate for several years. That is true. Several
10 of them involve components that, quite frankly,
11 get to this very meeting, which is conducting our
12 business in the public, transparency.

13 And I think the current version of
14 Board Order 22 effectively would, if it was put
15 in place, would involve most of our
16 recommendations, evaluations votes to be done in
17 the private of our offices. And I have been
18 pushing for several years on this Board to have
19 more of that work done in front of the public.

20 The recommendations, where we want to
21 see them through and make sure they happen at the
22 plants, at the communities. And I think that's

1 totally very important for this Board to be
2 effective.

3 So I urge my colleagues on the Board
4 to at least wait until another confirmed member
5 of this Board is seated and has an opportunity to
6 review this material and debate it fully. Thank
7 you.

8 CHAIRPERSON MOURE-ERASO: So you have
9 a motion to make.

10 MR. GRIFFON: My motion was to table
11 the matter until we have our confirmed member of
12 the Board joins us.

13 CHAIRPERSON MOURE-ERASO: Well your
14 motion as stated requires a second. And I ask
15 again is there a second for that motion? Having
16 heard none I would like to call the question to
17 the first motion presented by Mr. Ehrlich.

18 So there is a motion on the floor by
19 Mr. Ehrlich that has been read and copies of it
20 has been distributed among the Members. And I
21 ask Mr. Loeb, our General Counsel, to proceed
22 then with a vote.

1 MR. LOEB: Mr. Ehrlich?

2 MR. EHRLICH: Yes.

3 MR. LOEB: Mr. Griffon?

4 MR. GRIFFON: A resounding, no.

5 MR. LOEB: Mr. Chairman?

6 CHAIRPERSON MOURE-ERASO: Yes. .

7

8

9 CHAIRPERSON MOURE-ERASO: Okay. I

10 guess this ends the business of the Board
11 tonight. Okay. So I forgot to say after I was
12 interrupted that the motion carries 2-1. The
13 motion is approved.

14 So this ends the business of this
15 public meeting. Thank you very much for all of
16 you to be here.

17 (Whereupon, the above-entitled matter
18 went off the record.)

19

20

21

22

A			
\$117,168 82:2	add 10:5 17:20 121:9 123:18	agree 109:15 115:19	API 36:14,21 37:9,10,12
\$96,394 82:2	added 80:12	agreement 11:1 116:4	37:14,15,17 38:7
A-C-H 137:20	addition 22:18 34:17 37:10 53:2 68:7	agrees 109:10	39:12,18,22 40:4,13
A-U-E-R-B 137:19	additional 40:16 53:4,4 58:6 88:13	ahead 91:9 123:15	40:14,19,22 41:7,9,10
ability 17:9 51:14,16,19 52:16 129:9,13	address 8:6 16:8 58:9 73:2 79:1 80:8 84:15	air 18:18 27:6 110:15	41:18 45:17 60:2 84:2
able 19:17 58:11 81:9 81:12 95:22 97:3,4	addressed 76:22	air 120:22 124:20 125:8	appear 48:22 143:6
above-entitled 90:9 151:17	addressing 46:10 64:7 84:5	AJ 120:9	appeared 25:4
absolute 115:20 116:5	adequate 18:18 38:6	ALARP 75:14 76:2	appears 95:21
absolutely 131:20	adjacent 36:19	Alcaraz 120:11,11,12 120:13	Applause 10:10 94:7
accepted 69:12	adjournment 2:22 12:20	alert 42:19	98:17 100:22 102:5
accepting 131:3	administration 75:2 142:12 144:4,12	Alisa 137:15	103:19 104:5 107:22
access 38:20	Administration's 114:14	alliances 100:6	109:5 111:2 115:3
accident 4:10 5:1,21 24:17,20 66:7 74:1,4	administrative 66:22 142:17,20 143:7,15	allow 11:3 52:1	116:13 118:2,10
accidently 94:9	adopt 10:2 24:3 146:11 146:16,17	allowed 67:12,15 74:22	120:6 125:12 127:19
accidents 3:21 4:2,9 8:5 10:19 44:12 68:8	adopted 6:12 23:13 73:11 75:16 77:19	allowing 127:16	130:5 132:3 134:12
accidental 65:5 75:13 75:20 81:16	adopts 66:20 143:22 144:19	allowment 107:9	137:14 138:20 140:11
accidently 94:9	Adrian 72:13	Alloy 37:18 41:1	140:15
accidents 3:21 4:2,9 8:5 10:19 44:12 68:8	advanced 70:4	alloys 37:4	applicable 19:3
accidents 68:22 95:12 122:12 135:2 145:11	advances 24:4	alternative 15:11 30:3 96:22	apply 19:20 92:11
accountability 42:3 50:16,21 55:12 61:4	advice 17:15 63:1	alternatives 48:7	appreciate 85:6 91:16
accountable 61:5 110:7 111:7	advising 111:5	Amanda 20:14	93:5 103:18 115:10
accounting 66:8	Advisory 65:20,22	ambulances 131:4	115:16 116:11 126:6
accumulate 59:13	affect 148:21	amended 92:5	128:10,22 129:12
accurate 95:7	afternoon 3:4,5 25:1	amending 77:2	appreciated 93:18,19
achieved 117:8	agencies 70:2,20 71:3 79:15 80:13,14 81:5	amendment 73:11,14 74:9 75:15,16	appreciative 99:1
achieving 93:21	agency 3:20 23:11 70:5 86:14 129:8 141:21	American 7:7,7 36:9 38:8 39:7 41:13	apprenticeship 120:21
acknowledge 72:8 75:16 103:21	agency's 142:11,18 144:3	Americans 125:21	122:9
acknowledgment 9:5	agenda 11:4,21 20:2,5 63:9 90:3,3,13 139:4	amount 94:18 123:4	approach 49:22 60:4
act 112:17 120:18 127:12	aging 114:21	Anacortes 135:4	approaches 15:9,11
action 26:15 33:3 43:17 79:1	ago 73:4 83:1 106:5	analysis 6:20 23:7 31:4 39:1 45:12,18 46:2,6	appropriate 18:19
actions 5:21 6:1 11:16 32:11 34:14 40:9		analysis 46:12 47:7,10,18 48:6 48:8 52:7 53:20 66:6	143:17 147:16
agency 3:20 23:11 70:5 85:5,7 86:16,17 95:16		analysis 66:16 73:16,18,19 74:5,12 77:8,9,11,13	approval 21:4 42:17
agency 95:17 146:10		analysis 74:5,12 77:8,9,11,13 79:9 83:18 96:18	67:1
active 119:22		analysis 109:11 113:19 146:1	approve 139:10 141:21
activist 129:3		analyze 46:12	approved 5:12 14:18
activities 14:5 22:5 32:18 69:22 70:12		analyzed 7:2	69:7 77:15 115:2
activity 34:1 52:16 57:14 70:22		Andres 102:7	151:13
actual 35:2 56:1		Angie 94:13	approves 113:19
ad 84:8,13 93:7		angles 121:17	approximately 28:9
		animation 24:19,21 30:8 99:7 100:17	29:4
		animation 103:3	April 16:21 23:3 29:2
		annual 82:1 83:11	32:22
		answer 53:7	area 4:21 35:18 49:13
		answered 18:5	59:18 91:3 100:15
		anticipated 67:1	108:19 122:6 124:20
		antiquated 144:2	125:7 126:16 131:18
		anybody 12:6 128:19 138:22	areas 78:9 94:22
		anyway 122:13	143:17
		apart 119:9	arguably 62:12
			argue 132:17
			arrived 91:9
			Asia 104:14
			asked 5:8 7:12 16:8
			93:9 105:13 112:13
			119:5
			asking 21:3
			asks 57:20 107:16
			ASME 41:14,15

aspects 4:1 50:18
 92:21
assembled 26:20
assess 26:5 36:3 58:20
assessing 92:21
assessment 43:18 67:3
 67:7 92:16,18
assessments 66:5
assigned 23:4
assistance 71:5
associated 139:14
Association 130:11
assumed 28:16
assure 95:17
atmosphere 58:14
Atomic 132:10
attempt 17:21
attempted 27:12
Attempts 35:7
attendance 19:12
attention 14:12 15:17
 59:16
audible 42:8
audience 31:8
audio 1:22
audit 79:12
auditing 70:14
audits 80:20
Auerbach 137:17,18,19
August 8:15 14:15
 16:18 22:11 24:22
 32:3,12,14,18 64:8,13
 106:4 139:12
authored 9:18
authorities 5:8 140:22
authority 33:14,20
 45:10 51:7,8,16,22
 74:19 97:6 108:8
 115:17,21 116:5
 133:10 135:11 142:3
 143:17
authorize 147:11
automated 121:19
automatic 123:3 138:1
automation 122:15
available 31:8 58:20
 59:6 84:2 146:2
 147:12
average 29:6 114:15,18
averaged 68:21 69:1
averaging 69:2
averts 110:13
avoided 102:1
Avoiding 36:10 39:12
aware 18:13 60:14 92:1
 130:22
awareness 39:20 40:15

B

B 132:6
B-R 125:17
back 10:1 13:3,18 51:12
 52:5 84:11,15 90:18
 91:5 93:10 101:9
 104:21 117:18 121:17
 121:19 128:19 130:1
backed 27:4
Baker 53:14,15
bargaining 116:4
barrels 29:6 67:8
bartered 129:18
base 82:1
based 38:22 55:17 56:8
 57:11 58:12 65:12
 67:8 87:21 109:19
 144:9
basically 54:18 56:13
 76:19 77:12,21 79:16
 81:9 84:4 92:20
 101:12 136:7 148:16
basis 54:21 83:11,11
 143:12
Bates 72:3
Bay 108:19 122:22
 124:20 125:7 126:16
 131:18
Beckles 72:4,21 100:1
beds 131:7
began 27:3
behalf 104:12
behavior 117:11
behold 119:7
believe 25:20 31:7 47:9
 59:7 62:15 64:2 72:1
 72:5,7 89:20 94:13
 98:8 101:14 102:22
 117:7 132:22 133:3
 136:14 141:7 148:19
believed 25:19
believes 96:16 109:12
beneath 26:21
benefit 9:6 58:16
best 10:3 42:5 93:13
 144:7
better 9:12 18:11 60:8
 75:2 81:8 106:18,18
 124:10
beyond 83:14 109:16
 112:15,18 124:15
 133:1
big 57:2 95:19
bigger 133:4
bill 1:19 2:14 63:22 71:9
 87:7,11 89:6,6
billion 128:17
billions 114:11 128:18

129:6
bit 51:11 80:19 85:1
 104:7 133:1 135:6
BK 116:14,17
black 4:19
blending 29:9
blow 124:11
board 1:1,9,11,12,13,22
 2:10,20 3:6,8,9,10
 5:12 11:6,12 12:1,19
 13:14 14:19,19 16:10
 16:21 19:17 20:3 21:8
 21:21 22:9 39:2 43:1
 43:7,22 44:3 48:10
 55:10 64:5 66:15,18
 66:20 71:13 75:12
 76:15 81:11 84:20
 90:5,22 91:3,5,8,11
 93:8,20 98:22 99:4
 102:9 104:2,18 108:5
 109:9 115:7 126:4
 129:8 133:8 134:21
 139:9,22 141:13,17
 142:7,19,21 143:2,5
 143:16,18,22 144:2
 144:14,18 145:6
 146:8,9,11,13,13,14
 146:16,19 148:14,15
 148:18 149:8,14,18
 150:1,3,5,12 151:10
Board's 8:14 64:7 84:8
 145:4
body 100:11
bomb 114:20
bosses 133:6
bottom 106:8 125:11
 132:20
boy 132:7 137:20
BP 21:7 53:13,16 62:20
break 12:3,4 90:7,8,12
breather 90:7
brief 110:3 143:2
briefly 29:1 90:10
bright 142:9
Brightman 125:14,15
 125:16,17,19
bring 82:1 100:9 102:11
 120:16 126:1 127:11
 128:19
bringing 14:12 126:8
Britton 132:5,5,6
broad 97:5
broken 99:12 125:10
Brother 118:4
brought 59:15 100:17
 126:20 127:3,13
 137:21
Brown 64:14

budget 17:18
budgeting 143:10
 144:12
build 127:10
built 132:21
business 17:12 141:17
 147:17,18 149:12
 151:10,14
busy 89:17
Butt 71:22

C

C 1:15 3:1
C-I-T-R-O 118:16
C-L-A-U-D-I-A 118:16
Cal 79:18,18 82:19
Cal/OSHA 1:19 2:13
 11:19 15:4 22:3 63:16
 66:13 70:3 79:17 80:6
 80:14 81:1 87:15
 112:17,17 120:13
 135:22
Cal/OSHA's 64:11 67:7
CALARP 65:6 70:6
calendar 69:16
California 4:15 5:19 6:4
 6:14,15,16 14:1 15:2
 15:12 22:12 23:4,10
 23:19,20 24:10 43:2,4
 43:8,9 46:9 64:1 65:5
 71:10 79:18 81:16
 86:20,22 87:14 89:9
 92:12 126:15,19
 128:5 130:10 132:11
 139:13 140:22 141:6
call 5:4 50:8 63:10,10
 71:8 76:10 77:7 83:6
 90:13 99:17,18,21
 121:22 138:15 140:1
 141:4 148:9 150:16
called 6:7 25:18 53:14
 64:22 77:12 78:7 88:9
 89:6 109:22 120:19
 121:3 136:1 140:5
 144:20
calling 14:6 100:4
calls 5:14
calm 58:13
Camilla 119:5
campaign 124:4
cap 107:5
capabilities 7:1
capacity 114:10
carbon 30:1,13,14
 36:17 37:3,8 39:15
 40:2,18 41:3
care 9:3 105:10
cared 130:14

careful 96:18
Carlton 97:15
carries 151:12
case 13:4 16:6 38:16
 86:17 98:9 141:11
 142:18 145:17,21
 146:7 147:14
cases 51:12 68:5 125:5
 145:8,18
catalyst 14:3 86:9
catastrophic 22:13
 34:11 35:16 38:18
 39:15 40:1,17 58:21
 59:2 110:12 126:18
catastrophically 29:3
categories 30:21
cause 22:21 66:6 74:5
 107:7 117:8
caused 4:20 26:18
 49:11 129:15
causes 4:2 29:17 34:13
 91:18
CBE 102:7 109:7,10
 112:18
CCPS 50:17
cell 13:11
center 50:17 55:20
 130:13 131:1
certain 107:10
certainly 46:4 55:6 57:7
 62:15 75:9 95:6
 113:15
certificate 104:2
Certified 70:5
cetera 46:1 62:5 102:1
 133:19
chair 71:11 102:8 115:6
 143:15 144:10
Chair's 144:5
chaired 91:3
Chairman 13:17 14:18
 19:9 20:7 44:2 45:2
 48:13 49:17 63:6
 76:14 90:18,21 98:22
 109:8 117:2 139:2
 140:9 141:19 148:4
 151:5
Chairperson 1:10 2:3
 3:3,7 10:11 19:7 20:1
 44:4 48:9 49:15 63:8
 71:7 76:9 84:17 85:14
 86:2,12,13 87:9 89:18
 90:11 91:7 94:6 97:13
 102:4 103:20 118:3,7
 139:3,20 140:10,12
 140:16 142:19 143:3
 143:11 147:20 148:6
 150:8,13 151:6,9

challenges 16:9
chambers 10:8
Chan 120:8,8
change 10:2 45:12,13
 45:18 46:3,5 47:5,11
 47:19,19,22 48:6
 73:20,21 74:2,6
 121:13,16 125:2
 135:12 137:13
changed 80:8
changes 45:19,21,21
 46:6 48:1 66:2,17,21
 75:8 92:7
changing 125:10
Chantanasuk 138:21
chapter 145:3 146:18
characteristics 39:21
 40:16
charge 133:5
charged 74:18,19
charges 126:20
chart 60:11 61:19
charter 3:22
cheaper 97:10
check 25:2
chemical 1:1,9,11,11
 1:12,22 3:6,21 4:2,10
 7:3,4 8:14 19:20 20:3
 50:17 64:7 67:17
 71:12 74:1,3,7 75:12
 91:5,11 99:20 132:10
 133:8 134:20 139:9
 140:20 146:12
Chevron 1:3 4:14 5:4
 6:21 8:16 10:14,15,21
 11:9 13:22 14:15
 16:22 17:3,21 20:10
 20:12 21:15 22:6,11
 22:15 23:9 24:19
 25:11 26:13 27:12
 29:22 31:10,15 32:19
 33:13,16 34:2,7,16,20
 35:11,19 36:1,7 42:1
 42:2,4,17 43:20 44:9
 45:4 46:8,18 47:4
 49:19 50:2 53:9,21
 54:3 57:17 61:15 64:8
 64:13 69:20 78:3,6
 80:3 82:11 84:10
 91:21 92:16 95:3 98:1
 103:12 105:6,8,15,19
 106:6,14,17 107:7
 110:22 112:4 114:16
 115:14 116:3 117:9
 119:3,4 122:9 128:15
 128:18 131:19 132:8
 133:7 139:6,11
 141:11,15

Chevron's 17:15 18:9
 25:22 32:7 55:20
 100:20 113:22
Chevrons 136:16
chief 72:12
children 106:11
Christi 145:13 147:7
Christopher 7:15,20
Chrome 30:17
chromium 30:4
circuit 31:19 59:9
circuits 37:3 41:3 56:5
circulated 99:8
circulating 12:6
circumstances 9:16
cited 46:1 52:13
Citgo 145:13,18 147:6
cities 119:21,21 120:4
citizens 119:8
Citroen 118:15,15
CITRON 118:16
city 1:19 2:14 5:20 7:9
 11:20 15:2,5 21:7
 22:3 23:9 43:3,8,9
 46:10 53:13 62:20
 63:22 64:1 71:9,10,13
 71:21 72:18 73:1,10
 75:6 76:20 80:9 82:6
 82:6,15 91:20 92:4,12
 97:16,20 100:1 101:8
 101:13 105:2,11,18
 111:5 118:20 119:4,6
 119:8 135:3
city's 74:15,18 75:18
clamp 26:12
clarification 142:13
clarifies 144:4
clarity 124:9
class 108:14,20
Claudia 118:14
clean 21:8 121:8
clear 102:17 142:15
clearly 103:8 110:7
 143:14
climbed 27:8
clipped 127:2
close 18:15 25:14 93:15
 145:8
closed 145:16
closely 72:9 74:21 75:1
 76:16 77:17 80:6
 141:5
closing 2:22 140:17
closure 131:4
cloud 22:16 27:5,20
 28:2,6,10
Clyde 1:19 2:13 63:15
 64:10

Code 37:13 40:13
codes 31:2 36:7 37:6,9
 38:9
coffee 138:10
coking 114:10
colleagues 86:15 150:3
collect 71:1
collective 116:4
collectively 136:13
combustible 25:10
come 12:7 81:12 96:13
 99:4 102:11 105:8
 107:6 109:1 115:11
 116:10 117:17 125:22
 131:9 138:13
comes 48:15 115:21
 121:22 131:20 135:13
comfortable 33:22
coming 10:1 71:13
 89:11 91:5,11 94:3
 105:11 126:8 138:17
command 34:8,19
 48:22 49:3 142:3
commander 35:15
 59:16
commands 34:12
command 85:11 126:8
comment 2:18 12:7,14
 48:14,15 66:19 85:4
 86:6 90:20 94:11
 139:19
commenter 90:21
comments 10:21 12:5,8
 12:12 48:11
Commission 98:3
Commission's 129:18
Commissioner 97:21
commissions 136:15
commits 15:20
committed 142:9
committee 9:22 43:12
 43:15 65:20,22 72:19
 77:18,18 84:9,13
 92:13 93:8,11 100:4
 104:13 105:19 128:6
committees 54:15 60:9
 62:3
common 22:22 29:18
 83:6,16 127:4
communicated 34:18
communities 19:5
 101:4 110:14 111:16
 133:21 137:1 141:8
 149:22
community 9:3,13,16
 18:17,20 22:19 43:14
 65:12 75:7 91:14
 92:14 93:18 94:5

98:10 99:15 100:7
 101:3 102:12,16,19
 103:12 105:1,10
 106:9,10 107:16
 108:7,20 109:19
 112:19 117:15 126:7
 126:9 127:13 128:11
 128:14 130:2 132:2
companies 110:6
 111:21 135:13
company 10:21 43:13
 57:15 137:21
compared 30:16 69:11
compensation 81:8,13
complain 106:1
complaint 69:17 112:16
complaints 68:8 69:1
complete 68:13
completed 52:22 69:6
 73:10 93:1 121:19
completely 5:17 149:6
completion 146:3
 147:16,18
compliance 67:16,21
 68:1,5,14 69:5 70:7
 70:21
Complicating 142:22
comply 89:13 105:15
complying 69:10
component 29:14
 31:18,20 32:2,9 37:1
 37:16 54:8
components 36:20
 37:2 41:5,8 56:6
 143:21 149:10
composition 45:13,22
compounds 29:20
comprehensive 36:12
 69:9 117:5
comprised 43:12
concentrations 36:18
concern 51:6 96:14
concerned 48:19
concerning 6:6
concerns 16:9 34:4
 52:10,18 64:20
concludes 43:19
 141:14
concluding 4:15
conclusion 116:10
conclusions 92:22
concrete 53:2
conditions 34:17
 133:11
conduct 45:17 47:4,18
conducted 11:13 33:15
 47:17 52:12 68:6,15
 68:18 69:17 89:3

92:19 145:1 147:14
conducting 41:20 46:2
 67:20 149:11
conductor 122:6
confidence 52:15
 136:11
confident 137:1
confidential 147:17
confirm 78:1
confirmed 148:14,19
 150:4,11
confirming 100:12
conflicting 144:1
conform 74:16 75:1
congratulating 141:14
Congress 129:11
Congressional 9:21
Congressman 7:16,21
 8:2 10:7 16:20 17:7
connect 17:9
consequences 52:3
 96:4
consider 14:6 44:19
 139:5
consideration 16:6
 21:3 92:10 137:13
considerations 17:19
considered 15:16 44:21
 59:15
consisted 65:19
consistent 38:6 40:14
 83:8 144:6
consists 20:13 142:8
constituents 8:5,10
constraints 68:4
constructed 30:1
construction 30:3,12
 30:20 31:21 46:14
 47:13 112:1
contain 41:5
contained 25:10 139:15
containing 30:4
contains 36:17
content 44:16,19,20
 46:15,20 47:2,20
 114:15
CONTENTS 2:1
context 116:8
continue 9:13 15:10
 20:4 50:10 63:9 79:10
 79:11 80:7 90:3,12
 118:8 132:1 135:2
 139:15
continued 26:19 32:16
 33:10 80:17
continues 129:16 142:7
continuing 23:14 94:2
 103:5

continuity 51:3
continuous 24:7
 124:14,15
continuously 43:4
Contra 1:20 2:15 5:19
 7:8 8:1,8 11:19 15:2,4
 22:3 23:10 43:2,6,7
 45:5 46:9 63:21 70:8
 74:17,17 76:12 90:22
 92:4 93:19 113:14
 115:15 128:1
contract 111:1 134:1,1
contracted 145:21
contracting 143:10
contractors 89:7,9,11
 89:16
contrast 68:13
contributed 16:18
 34:10
control 36:16 38:11
 133:11,13
controls 24:6 66:4
convened 65:9
convincingly 133:9
cooler 35:2
cooperated 10:17
cooperation 10:18
 80:11,17 81:4 95:3,6
coordinate 65:2
coordinated 70:14
coordinating 70:10
 128:6
coordination 65:7
 69:21 70:12
Coordinator 7:16,22
copies 150:19
copy 10:6 80:19
corner 138:6
cornerstone 17:1
corporate 53:9 54:3,10
 63:1 132:20
corporation 17:9 42:1
 53:12 101:15 117:22
 147:10
corporations 129:5
Corpus 145:13 147:6
correct 56:3 59:17
corrective 47:16
corrode 30:11 36:18
corrodes 30:1
corroding 112:5
corrosion 5:6 22:22
 25:13 29:16,17 30:7
 31:13,17 36:11,16
 37:5,9,11,21 39:10,13
 39:21 40:11,15 41:4
 44:18 45:1,11,19,22
 48:3 54:7 56:4 59:3

59:14 61:7 78:17
 99:17 113:6
corrosive 111:13
cost 54:22 55:5 133:14
 133:15,17
Costa 1:20 2:15 5:19
 7:9 8:1,8 11:19 15:2,4
 22:3 23:10 43:2,6,8
 45:6 46:9 63:21 70:8
 74:17,17 76:12 90:22
 92:4 93:19 113:14
 115:15 128:2
Council 7:9 43:3,9
 71:21 72:2,3,3,4,6,20
 73:10 97:16,20 100:1
 101:8 105:3,12 128:2
 129:19,20
Counsel 1:15 3:12
 140:2 150:21
Counties 70:8
country 6:17 8:13 85:9
 85:22 92:8 113:15
 114:5 141:8
county 1:20 2:16 5:19
 7:9 8:1,8 9:19 11:19
 15:2,4 22:3 23:10
 43:2,6,8 45:5,6 46:10
 63:21 72:21 73:1
 74:17,18 75:20 76:12
 80:10,12 82:15 90:22
 91:20 92:5,12 93:19
 100:3 105:18 111:5
 113:14,18 114:3
 115:15 128:2 130:20
county's 76:20
couple 50:9 60:18
 97:15 104:13 106:5
 107:14 123:22
course 44:13 86:13
 99:8 103:13 125:18
 126:1
court 112:19,21
cover 11:3 83:4
covered 6:19 44:8 69:4
 73:17 78:10 83:8
covering 144:12
coworkers 49:7 136:6
crackers 114:12
craft 8:10
create 59:18 136:19
created 43:17 51:21
 101:22
creating 98:9
credit 5:18
criminal 126:20,21
criminals 127:4
criteria 32:7 56:14,21
 57:2 58:11,13

critical 90:1 112:7
131:8 144:21
cross 30:9 70:13,13
147:4
crude 22:14 24:22
26:10 27:18 29:5,7,8
29:18,20 44:17 47:20
47:22 48:1 107:5,6,6
110:9 111:20 112:10
112:20 113:5,10
114:1 131:18
CSB 1:16 2:6 3:6,12,14
3:19 4:11,15,22 9:13
9:22 10:17 15:18,20
22:15 23:1,8,17,20
24:9 26:17 31:6,10
32:4,13 33:11,21 34:7
35:3 36:8 37:6 38:1,4
39:11,17 40:3,8,12,21
41:6,12,14,22 42:2,7
42:16 45:3,15 51:11
53:11,13 71:5 72:10
72:19 86:8 99:1
104:18 116:20 141:10
141:20,21 142:1
145:8,10,18,21
146:15,17,21 147:1
147:12
CSB's 8:18 11:1 20:7
20:12 23:12 28:22
29:2 43:19 73:2
146:18
cultivated 103:1
culture 6:22 8:20 17:2
18:9 31:1,10 32:15
33:15 43:5,18 49:20
50:2 51:6 52:9 53:15
53:19 57:8 66:5 92:16
92:21 103:11
CUPA 70:6
current 14:22 52:10
58:3 72:6 149:13
currently 52:6 92:18
126:2,14
Cutcheon 20:15
cuts 120:4

D

D 3:1
damage 23:1,6 34:9
37:14 39:19 58:1 59:1
66:5 77:22 78:2,9
79:8 101:21
damaged 29:15
Dan 20:13
danger 4:18 99:13
131:13
dangerous 26:15 99:20

102:21 132:15,16
135:17
Daniel 1:16 21:13 44:3
90:14
data 55:18,18,21 56:1,2
56:8,9 70:19 114:15
database 42:21
date 23:1 98:7
dating 145:9
day 29:6 33:20 34:19
35:5,11 106:3 109:20
109:20 137:21 138:13
days 33:6 88:3,12
dead 28:16
deadly 23:14
deal 17:21 21:15 103:5
143:6
dealing 45:13 50:22
87:11
deals 89:7
dealt 45:3
death 22:18
deaths 8:9 136:22
debate 149:9 150:6
decade 23:16 112:14
decades 112:5
December 106:4
decide 58:11
decided 26:8
deciding 35:21 50:10
decision 17:17 18:2
27:17 32:13 33:9
50:13,15 54:22 56:2,3
57:21 58:10 59:6,8
60:21 63:5 96:20
101:11,13,14 112:21
114:4 120:1
decisions 55:8,14,16
55:18,22 57:11 58:15
59:17 61:5 100:13
declining 52:14
decrease 44:20
dedicated 142:8
deemed 26:15
deep 21:9
deeply 8:17 50:7
141:10
defend 136:5
defer 88:10
deferred 42:11,12 88:6
88:13,21
defined 24:3
definitely 85:21 100:2
degree 29:4 107:10
121:16
degrees 25:9 35:1,2
67:18 78:18 107:12
delegates 143:11

delegating 143:17
delineating 143:14
delineation 142:16
delivered 149:1
delve 55:7
demand 108:8
Democracy 103:13
demolished 145:16
demonstrated 102:17
133:17
demonstrates 134:6
demonstrating 30:9
denied 42:11,12
dense 28:5
department 1:20 2:16
6:5 34:20 67:5 77:15
82:20
departments 80:13
81:2
depending 30:11
depicting 24:19
deployed 20:18
depressing 135:4
DeSaulnier 7:17,22 8:2
10:7
described 28:17 65:16
design 4:3 23:5 30:18
74:8
designed 4:8
desk 63:14
despite 32:16 33:10,20
38:17
detail 76:4
detailed 54:15 61:19
71:18 99:2
determination 38:15
determinations 56:15
80:20
determine 35:15,17
133:18
determined 22:15
23:20 38:1
determining 36:3
develop 5:9 40:5 42:3,8
42:17 57:18 58:8 73:2
83:13 144:10
developed 35:4 41:19
49:1,2 58:13 103:1
143:11 144:17
developing 36:2 69:21
development 43:11,16
47:15 70:18 73:18
86:19 92:15 100:3
deviance 50:8
diagram 60:8
dialogue 14:3 89:2
diameter 59:10
dictates 132:21

die 8:5 105:11 132:18
132:19 133:12 138:8
died 111:19 128:20
diesel 25:11
different 47:21 51:20
73:8 78:10 79:15 81:4
82:8 107:13,14
113:11
difficult 19:19
Dina 123:8
DIR 65:9,14 66:13 67:4
67:6,12 70:10
DIR's 65:16,20
direct 44:6 62:21
direction 121:13
directions 121:16
directives 144:11
directly 26:20 44:16
57:21 58:10
director 1:16,16 2:7
11:7 20:4,8 63:20
76:11 90:14 93:9
125:20 143:4
dirty 114:12,21
dirty 107:6 121:7
127:12
disappear 135:19
disappoint 86:5
disappointed 8:17
disaster 49:13 110:5
disasters 110:1
discovered 40:8
discuss 11:15 14:17
15:21 37:11 42:14
63:11 70:11,17 116:8
118:21
discussed 5:5 23:13
26:6 54:4
discusses 15:8
discussing 45:9
discussion 2:12 6:2
12:19 16:3 51:8 65:17
90:15 96:16 139:21
140:1 141:15 148:3
148:11,13 149:8
dispoilization 136:22
disregarded 98:6
distillation 25:4,17
27:22 29:5,7,19
145:22 147:15
distributed 150:20
district 63:15 64:11
110:16 124:21 125:8
disturbed 13:12
division 69:6
Doctors 130:13,22
document 32:7 36:15
56:13 61:10 149:2

documented 23:5
112:13 133:9
documents 37:20 55:16
doing 45:12 72:18 77:7
80:22 97:2 98:13,14
111:8 112:11 118:8
119:12,12 124:20
dollar 133:15
dollars 128:17,18 129:6
Don 1:16 2:7 20:22
111:17
Donald 20:8
doors 13:4
doubled 114:10
doubt 24:16 58:2
dozen 57:20
Dr 20:5,6 90:14,15,17
94:8 97:14 98:16,18
139:4
draft 21:4,19 22:1 31:5
44:1 73:8
drafted 6:5
dramatically 113:6
draw 15:17
drifting 4:19
dripping 25:5
drive 135:13
driven 17:18 55:18
driver 54:22
driving 54:22
due 25:13 29:15 31:12
36:18 83:17,18,19,20
148:15
dumping 110:18
DuPort 20:20
duties 43:15

E

E 3:1,1
E-D 97:19
E-L-L-I-O-T 108:4
E-L-Y 94:17
E-N 118:17
Eagle 145:12,17 147:3
earlier 8:19 84:14 91:21
93:8 104:15 107:9
early 114:8
Earth 126:22
easy 138:4
echo 85:18 86:14 102:9
129:14 131:15
economic 66:16
economy 9:17
Eduardo 72:4 97:18,19
Education 9:21
effect 48:2 67:2 124:13
effective 18:18 36:12
42:4 77:9 78:1 150:2

effectively 23:21 31:11
32:2 34:8,18 40:10
124:9 149:14
effectiveness 66:10
69:14
effects 131:20
effort 99:3
efforts 3:16 8:15 87:4
93:17 141:3,14
Ehrlich 1:11 2:4 3:11
19:8,9 20:2 48:11,13
49:16 85:15,17 140:7
140:8 141:19 150:17
150:19 151:1,2
eight 25:5
either 31:17 32:11
36:22 67:17 136:8
EI 132:8
elected 129:20
electronic 70:18
element 50:20 62:13,17
68:9 69:10
elements 66:12
elevate 42:14
eliminate 6:10
eliminated 143:8
Elliot 108:2
emergency 6:22 13:4
18:13 21:17 27:18
31:1 34:6,14 35:14
48:17,21 49:6 57:14
58:15 79:19 95:9
131:2,7
emission 124:22
emissions 124:16
emphasis 96:9 117:10
employee 42:6 66:11
95:4
employees 6:12 9:1
22:16 33:13 34:3
38:22
employers 6:10
empowers 119:21
emulate 141:8
encountered 106:5
encourage 5:9
encouraged 33:9
encourages 51:22
144:10
endangerment 35:9
endorse 117:12
ends 151:10,14
energy 21:8 114:14
enforced 102:22 133:13
enforcement 65:7
69:22 70:11,12,22
enforcing 74:19
engine 28:12

engineer 129:1
engineering 67:17
69:13 82:9
engineers 7:8 26:4 38:8
41:14 52:14 81:15
engulfed 22:16 28:13
engulfing 28:3
enhance 24:10
enhanced 64:16 69:21
enormous 128:16
enormously 99:6
ensure 24:7 35:19 42:5
55:13 66:10
entail 69:8
enters 121:8
entire 108:18 141:10
entitled 139:11 146:12
146:15,19
entrances 13:3
entranceway 10:8
environment 9:17
51:21 95:21
environmental 23:11
78:7 104:14 117:13
EPA 14:6,9 70:7 79:18
80:14 81:1 82:19,19
equipment 4:3 29:21
34:5 37:15 39:19
41:16 47:22 83:21
equivalent 76:1 77:14
77:16
Eric 118:12
erroneously 34:21
escape 28:5,16
escaped 9:1 22:17
especially 44:9 89:22
91:16 115:16 146:4
essential 38:21
establish 39:14 41:2
145:20
established 23:22
41:10,18 56:22 75:11
92:13
establishing 57:1
144:15
establishment 65:1
69:4
establishment's 69:9
69:11,14
et 46:1 62:5 101:22
133:19
eternal 103:14
evacuate 13:6
evacuated 49:12
evaluate 35:15
evaluated 95:15
evaluation 38:15 69:9
evaluations 149:16

evening 6:2 7:19 8:3
19:10 71:22 72:2,11
76:8 91:1 102:8 115:6
116:16 120:12 125:16
evening's 11:4
event 49:6,6 110:13
114:19
events 24:17
eventual 18:12
eventually 28:19 44:17
everybody 3:4 109:1
138:4,9,16
evidence 59:14
evident 10:19
exacerbated 34:15
exact 27:9
exacting 97:22
exactly 135:16,20 136:2
examine 4:1 64:15
examined 15:15
examines 16:19
example 6:3 51:17
53:11 61:6,9 124:12
142:14
examples 33:8 60:19
excellence 17:1
excellent 71:18 95:1
109:11 142:7
exceptionally 142:9
excess 141:22
excited 119:17
excuse 91:8 140:2
executive 14:5 85:19
108:5 125:20
executive's 142:2
exemplary 85:6
exercise 51:2,16 52:2
116:1
exercising 51:19 134:7
exert 129:7
existence 146:5
existing 37:18 41:1
57:15 73:17 89:3,13
146:14
exit 13:3
exits 13:10
expand 67:13 77:4,4
80:19
expanded 27:20
expanding 80:22
expensive 97:8,9
experience 48:16 51:11
81:10 95:9,12 133:16
144:10
experienced 21:7 22:12
45:1
expert 145:22 147:15
expertise 17:10 58:20

62:14 99:5 119:10
explain 33:19
explanatory 99:10
explicitly 66:8
explosion 4:13,18 9:2,4
 126:18 147:3
explosions 135:2
express 141:10
expressed 11:1
extensive 6:6 78:8
 93:17
extent 6:11 56:3,4
 75:21 143:8
extraction 112:7
extremely 29:15 142:8
Exxon 122:21

F

F-R-E-I-W-I-R-T-H

134:16
faced 18:14 120:13
facilitate 80:11 90:15
 146:10
facilitated 3:17
facilitation 70:18
facilities 3:22 15:10
 37:2 74:9 83:4,8 88:8
facility 16:4 19:3 20:20
 36:13 40:6 62:22
 73:22 83:13 145:15
 147:11
fact 46:8,18 48:15 55:3
 55:18 56:1 57:19 59:9
 74:17 106:2 111:12
 142:6,22
factor 57:3
factors 46:16 47:4,12
 48:2 52:6 66:9
facts 59:13
factual 147:16
Fahrenheit 25:9 35:1
failed 29:3 31:19 32:3
 32:10 112:6 135:21
failing 38:14 117:8
failure 17:14 25:15
 35:17 40:11 45:8 54:6
 54:13 59:3
failures 16:17 18:8
 31:12 36:11 39:13
fall 107:4
familiar 24:16
family 106:11
far 68:16 103:9 112:22
 124:13
farther 129:21
faster 30:2 36:19 121:6
fatalities 20:20 28:20
FCC 112:8

Fe 132:9
fear 52:2 134:6
feasible 6:11 75:21
February 64:20
federal 3:20 15:20 16:1
 70:1,7,19 72:22 111:6
 141:4
feed 29:10,20 44:21
 45:14,19 46:20 59:11
 111:13 112:1
feedback 65:18
feeding 44:17
feel 28:7 49:7 75:22
 77:19 96:12 97:3
 99:13
feelings 86:14
feels 96:17
feet 25:6 28:3 121:22
fell 103:9
fellow 13:14
felt 95:2 141:10
FEMALE 151:7
field 67:22
fight 117:22 133:5
 134:11
Figure 60:6
file 146:1 147:14
filed 10:22 112:16
files 61:20
fill 82:13 119:3
filtered 102:13
final 2:20 4:12 5:2 6:18
 7:6 11:9 13:18 14:15
 16:14 19:1 20:9 21:14
 22:1,10 28:22 30:22
 31:5 42:22 43:19 64:8
 80:20 84:7 93:3
 113:19 139:6 147:13
finally 22:9 24:7 27:17
 33:6 36:7 38:4,19
 145:7 149:7
find 19:15 120:3
finding 115:16 116:20
findings 2:6 8:15,20 9:5
 10:2 11:2 13:20 18:22
 20:9,16 21:2,13,15,19
 24:14 28:22 29:1
 30:22 31:3,4,10 34:6
 36:8 39:1 43:18 52:20
 53:5,18 54:1 55:7,20
 65:14 79:2,7 93:2
 102:12 115:11 116:9
 117:10 139:13 145:20
fine 94:10
fingers 125:3
finish 137:9
finished 90:12 103:22
fire 1:3 4:13,18 8:16

18:12,15 27:7 28:12
 28:18 34:20 40:4,20
 41:11,19 64:8,12
 72:12,14 80:13 81:2
 84:10 91:19 96:19
 98:1 120:17 130:16
 136:1 138:8 139:12
 140:19 145:14 147:2
 147:6,10
firefighter 26:13 28:11
firefighters 26:2,21
 27:4,8,12 28:4 32:19
firefighting 27:11 60:2
fires 135:2
first 5:3 8:12 11:4 13:15
 16:15 19:11,13 23:3
 24:18 26:8 31:9 39:7
 39:8 44:9 46:7 49:19
 50:16,20 57:8 88:15
 88:16 90:21 91:4,10
 94:17 104:11 118:17
 120:16 122:8 124:3
 126:3,13 134:4 142:5
 143:21 148:10,13
 149:2 150:17
firsthand 102:13
fitter 120:20
fitters 122:9
fitting 26:12
five 8:10 66:8 73:17
 87:7 90:7,8 111:18
 120:20 126:16 138:7
fix 115:1
fixed 3:21 37:15 39:19
fixing 52:11
flames 28:13
flammable 32:21
flares 110:18
flaring 110:12
flash 147:2
flaw 60:16
fled 28:17
flee 28:19
floor 147:21 148:1
 150:18
flow 27:3 48:4 71:2
 121:18 122:15 123:2
 123:3
flowing 29:6
fluctuates 123:6
fluid 38:12 40:5 41:17
 41:21
fluoride 147:5,8
focus 16:14 53:8
 124:14
focused 14:14 68:9
folks 60:22 62:14 94:12
 131:9

follow 40:18 41:9,17
 53:6 54:12 61:17
 79:10,11 138:3,16
followed 11:7,22 12:18
 21:20 40:7
following 11:11,14,16
 12:4 21:21 22:6 23:18
 25:22 39:2 41:22
 64:12 66:3 80:2 87:17
 143:12 146:9,22
follows 8:4 139:9
Foods 108:18
force 65:2 75:7
forefront 141:2
foreign 127:16
foremost 9:18 57:9
 126:3,13 142:5
 148:13
forgive 137:3
forgot 106:21 151:11
form 53:14
formal 35:12,19 66:19
formalize 100:9
formed 22:16 27:20
 28:10 64:14 73:1,7
former 72:5 97:21
 132:7 147:10
forth 58:11 121:17
 126:8
Fortunately 28:18
forward 9:7 13:19 15:7
 15:20 18:6,10 58:5
 81:5 93:13 94:2 99:8
 101:5 124:7 127:10
 131:22 148:21
foster 81:4
found 6:18 8:18 17:2
 22:21 26:17 29:20
 31:4,10 32:4,13 33:1
 33:11 34:7 35:3 36:8
 37:6 38:4 51:5 79:2
four 20:20 66:6 68:22
 83:15 143:21 146:7
 146:22
framing 32:7 55:15
 56:12 61:10
frankly 149:10
free 96:15
Freiwirth 134:14,15,15
frequency 75:19
friction 121:3,13
front 10:8 12:8 58:19
 102:18 128:8 149:19
fruitless 146:6
fuel 25:11 33:2
fuels 29:11
full 31:3 39:5 58:21
 101:15 111:18 129:20

full-time 82:9
fully 49:1,2 77:19 92:6
 144:6 149:4 150:6
function 143:18
functioning 144:3
fund 67:12
fundamental 50:15
 55:10
funding 67:6,15
funds 67:11
further 15:14 42:13
 57:9 76:5 111:10
 119:9 126:12 148:11
 148:12
future 4:9 96:7 130:20

G

G 3:1
G-R-E-G 109:9
gained 59:21
gaining 18:10
gas 20:19 25:10 29:5
gases 110:18
gasoline 110:17 112:9
gate 136:9
gates 138:1
gather 55:21 56:2,8
 73:7
gathered 26:5 28:4
gathering 35:20
Gayle 72:6 98:18 103:2
general 1:15 3:12 67:12
 140:2 141:22 150:21
generally 69:12
generated 4:19
genocide 126:21
gentleman 133:13
gentlemen 19:10
George 16:20
Gioia 72:22 90:21 91:1
 91:2,10 124:11
give 6:16 12:22 60:19
 83:11 84:18 99:5
 107:18 117:1 124:12
 137:13
given 4:5 11:12 101:15
gives 89:5
glad 13:18 16:19 86:8
 95:1 102:3 138:18
Glover 72:22
go 12:20 13:9 50:6 51:7
 67:2 83:14 91:9 97:4
 97:5 107:18 109:16
 111:10 113:22 114:12
 117:18 123:15 129:21
 138:2
goal 43:4 75:11,16,18
 117:7

goals 23:22 80:11
 124:18 125:4
God 141:4
goes 51:11,12 86:20
 131:19 135:6
going 11:4,7,8 12:14,15
 12:18 13:15 15:3 20:4
 34:5 63:11 76:6 81:14
 84:11,15,22 85:21
 86:5,5 89:2 96:6 97:9
 97:9 103:14 105:20
 105:20 107:7,8
 108:19 109:13 112:20
 114:1 119:16 121:4
 123:11,17 124:7
 127:6,7 133:1 134:9
 136:21 138:7,9,15
 145:1 148:21
good 3:3,5 7:19 19:10
 45:16 55:19 69:12
 86:10 89:21 91:1 95:3
 102:8,18,18 104:19
 106:15,15 115:6
 116:16 120:12 122:11
 122:22 124:7 125:16
 129:15 131:10
gotten 95:2 100:8
governance 141:21
 148:17 149:7
government 5:18
 119:22 129:8 132:13
 141:20 143:12
governments 136:15
governor 6:14 64:14
governor's 64:18 65:15
gradually 29:18
grandchildren 106:12
granted 113:20
grateful 130:17
gratitude 102:10
gray 30:10 103:16
great 5:18 15:11 71:16
 98:21 116:21 149:8
greater 126:16
greatest 6:11 75:21
greatly 91:15
Green 128:1,5
Greg 109:6,9
Griffon 1:12 2:4 3:10
 13:15,17 19:8 49:16
 49:17 53:6 54:12
 55:11 56:11 60:5
 61:17 62:10 63:6 86:3
 86:4 140:5,6 148:4,12
 150:10 151:3,4
Grim 20:14
gross 127:5
ground 25:3 125:10

group 26:6 32:6 56:14
 62:6 64:15,19 70:11
 70:15,17 73:5 96:9,16
 96:17 142:10
groups 54:10,15 60:9
 100:7,7 117:14
growing 27:5
guess 56:17 89:19
 90:12 124:2 151:10
guessed 116:1
guests 97:17
guidance 35:13 36:15
 37:22 38:5,13,19
 40:19 71:5
guidelines 36:10 39:12
 55:19 61:6
Gulf 132:8
guys 116:12,21 117:6
 121:1,10

H

H-U-G-H-E-S 108:4
haired 103:16
half 57:20 73:4 141:12
hall 119:8
hands 28:7
happen 19:21 86:16
 113:22 114:1 122:12
 122:13 135:3 137:2
 149:21
happened 17:6 49:9
 99:13 105:22 106:4
 111:17 114:19 119:2
 124:7 135:16,20
happening 44:13
 107:21 113:21 114:5
 119:18
happens 111:16 126:18
 138:6,8
happy 86:7
hard 115:10 116:12
 142:9
harder 113:8
harm 101:12,16,22
harms 32:22 34:17
 38:22
Harris 72:13 119:5
hazard 15:10 16:4 23:6
 66:4,6 73:19 77:11
 78:2 79:9 83:17 138:2
hazardous 26:1 32:17
 33:11,22 38:12 50:12
 63:20 70:9 76:11
 93:10
hazards 5:7 18:14 24:3
head 25:18
health 1:20 2:16 6:11
 66:15,18 74:18
 128:13 133:6
hear 6:1 11:14 12:4
 15:3 86:7,11 91:13
 97:7 100:19 102:13
 118:18 130:18 139:17
 139:20 147:20
heard 62:18 117:17
 125:19 150:16
hearing 15:7,21 16:7
 18:6 102:11 111:12
 113:16 131:15 140:1
 148:9
hearings 123:20
heart 125:11
heat 96:19
heated 121:6
heating 107:13
heavy 88:18
heck 119:15
heed 117:9
held 4:22 16:2 61:5
hell 97:9
Hello 7:19
help 19:19 28:13 31:12
 76:8 96:14 116:9
 121:11 130:3
helped 8:10 61:7 99:6
helpful 13:21 24:18
 98:2
helping 94:4
hey 114:22 130:9
hierarchy 24:6 66:4
high 15:10 16:4 27:13
 30:17 33:2 37:3 55:4
 107:11 114:18 122:8
higher 9:6,9,10 30:4
 36:19 42:15 55:12
 61:3 62:21,22 112:9
 112:20 113:5
highest 55:4
highlights 39:4
highly 17:8
hindsight 103:4
hire 67:16 81:9 82:4,13
hired 67:15,21
historically 9:10 51:9
history 106:2 113:9
hitting 39:4
hoc 84:8,13 93:7
hold 91:12,14 102:11
 110:5
holding 15:21 91:6
 111:6
Holmstrom 1:16 2:7
 20:8,22 21:6,11,12
 28:21 45:2 48:10
 49:21 53:10 55:2 57:7
 60:18 62:8,12 63:7

84:20 85:2,4,15,18
111:17
Holmstrom's 11:11
Holstrom 44:5
home 138:5
honestly 127:3
Honorable 64:4
honorary 118:22
hook 26:14,22
hope 10:1 13:8 15:14
18:22 89:20 103:10
117:4,9 119:18
129:16 131:22
hoped 26:11
hopeful 13:20 116:8
hopefully 98:6,11 109:1
117:18
horn 124:12
Horowitz 1:16 20:5,6
90:14,16,17 94:8
97:14 98:16,18 102:6
104:6 108:1 109:6
115:4,8 116:14
118:11 120:7 123:8
123:13 125:13 127:18
127:20 128:3 130:6
132:4 134:13 137:15
138:21 139:4
Horsehead 145:15,21
147:10,14
hospital 4:21 100:15
131:1,5
hospitals 130:16
host 75:7
hot 27:5,15 35:6,17
59:19 88:17 110:10
hours 68:1,12,21 69:1,2
69:18,19 70:4
Houston 20:21
huge 28:10
Hughes 108:2,2,4
human 66:8 133:17,19
hundred 107:14
hundreds 28:3
hydrocarbon 22:17
27:2,15 28:6 147:6
hydrocarbons 27:21
28:11 32:21
hydrogen 47:21 114:11
147:3,5,7
hydroprocessing
114:11
hydroprocessor 112:8

I

I-G-H-T-M-A-N 125:18
idea 136:21
identical 43:1 76:20

identified 23:17 34:18
51:14 55:10 56:6 57:8
57:10 71:1 73:19
135:17
identify 34:9,11 35:6
41:3 42:3 49:22 50:4
70:15 89:22
ignited 27:6 28:11
ignore 112:2
ignored 54:18
Ill 53:14
illegal 100:12
immediate 22:21
immediately 25:21 27:8
28:2 63:9
impact 45:19 58:21
78:7 88:8 124:1
impacted 46:21
impacting 99:10
impacts 119:20
implement 8:11 9:14
30:18 31:11 41:2 54:6
79:7 93:13 100:3
implementation 16:9
24:5 42:4 43:17 46:3
69:15 78:2 142:16
implemented 32:2
42:19 47:6 53:1 54:9
61:8 67:4 76:5 101:9
101:11
implementing 36:2
46:13 48:7 78:15
101:5
importance 45:12 46:1
46:11 50:22 51:14
55:11
important 7:12 18:4
40:1 46:4 51:2 53:5
57:10,15 58:5,10,17
59:22 63:4 71:15,20
86:19 92:2 93:16,21
98:9 102:16 107:5
115:18 116:2 120:3
128:12 136:5 140:20
148:20 150:1
importantly 66:11
improve 9:8,15 53:18
64:15 65:7 85:10 94:4
146:10
improved 10:3 19:4
36:1 46:14
improvement 50:1
124:14,16
improvements 14:22
15:15 24:8 86:10
93:21,22
improving 13:22 19:2
43:5 132:1

inadequance 4:4
inaudible 54:3 104:13
inch 25:5 29:14 32:2
122:1
inches 59:10
incident 11:17 14:16
16:15,18 18:4,5 19:18
20:11,19 21:15 22:6
22:22 23:3 29:4 31:15
32:13,14,15,22 33:20
34:8,12,19,19 35:5,11
35:14 36:1 43:21 44:9
45:7 47:16 48:22
51:13 52:7,10,22 53:3
53:13 57:18 59:16
61:8 63:13 72:13 74:1
83:19 133:7
incidents 8:7 9:10
23:15,22 33:8 38:7
50:10 59:22 80:5
145:20
include 6:20 16:3 37:12
47:11 62:16 65:2 66:3
70:21 73:14 74:10
75:17 77:3 87:6
included 47:8 72:21
92:13 127:1
includes 42:18 46:13
56:13 57:22
including 4:2 14:5 16:6
45:10,16 54:7 58:7
70:13 116:3 130:12
134:2 135:21,22
139:13 142:21 144:8
incompetence 127:6
incomplete 56:9
inconsistent 37:7 38:1
38:14
incorporate 40:9,13
41:8 60:3 92:6
incorporated 74:10
increase 33:17 39:20
40:14 46:15 81:14,20
81:21
increased 33:12 34:3
46:20 47:2,3 48:4,4
increases 113:6 123:4
increasing 78:21
independent 3:20
67:11 92:20
indicators 82:17 83:6,7
83:14,15,16
indigenous 125:19
126:1
individual 95:15 144:22
individuals 33:19 48:19
industrial 6:4,5 7:2,4
8:11 9:19 43:10 67:5

73:6,6,11 74:15 76:17
76:21 77:2,4 80:9
81:15 82:20 83:4,9
84:9 92:5,8 93:7,11
94:1 108:5 129:17,22
140:20
industries 9:5
industry 4:4 19:20
21:16 31:2 36:7,14
37:6,15 38:4 39:9,20
42:5 45:16 55:19 58:8
60:1 65:11,21 80:12
95:14 96:1 115:20
116:22
inferno 28:17
influence 129:10
informally 26:5
information 12:22 13:6
14:8 18:20 35:21 37:7
37:21,22 38:6,10 40:1
40:16 58:18 59:5
70:19,21 71:1,2 79:15
79:20 88:5 114:14
126:9 147:17,18
informative 60:7 98:2
108:22
informed 34:21
informing 126:9
infrastructure 8:21
114:21
inherent 46:13 113:19
inherently 23:5 24:5
30:6,16,18,20 44:11
44:22 46:11 47:6,10
48:8 73:15 74:12 77:3
111:15
inhibit 51:15
initial 29:8
initially 56:21
initiate 66:18
initiative 56:7
injuries 22:18
innovation 24:3
input 73:7 75:8 91:13
Inservice 37:13
inside 28:12 121:15
137:22
insights 59:20
inspecting 89:15
inspection 17:15 31:18
31:20 36:12 37:1,13
37:13,16 40:13 41:7
42:9,20 54:8 67:20
68:2,12 69:3,3 70:16
79:12 88:2,2,3,20
135:10
inspections 32:9 54:16
68:7,9,16,16,19,20,22

69:2,8,17,19 70:14,21
78:21 79:22 80:21
83:20
inspectors 25:11 70:8
installment 5:3
instance 129:12
instigate 10:2
Institute 7:7 36:9 39:7
instructed 32:19
instrumental 14:11
insulated 25:5
insulation 26:9,14,22
27:4,10,13 32:20 35:5
35:7
insurance 9:11
integrated 62:6
integrity 7:5 42:10
52:11 62:13 121:5,14
intended 47:17 74:16
intensive 67:22
interacting 54:11
interagency 64:14,19
65:1 70:11
interest 10:18 15:11
56:13
interested 119:14
interesting 89:19
interim 5:4 29:2 46:7
72:19 111:12
interjected 63:3
intermediate 29:10
internal 31:11 32:8 36:1
143:1
internet 99:9
interrogation 85:1
interrupted 151:12
interviews 33:21 53:3
introduce 20:3
introducing 3:15 11:20
introduction 28:21
inventory 27:21
invested 114:11
investigate 20:18
investigates 3:21
investigating 91:18
93:17
investigation 4:16 5:1,3
10:17 11:14 14:2
19:14,16 20:10,12
21:8,9,9,14 23:2
28:22 30:22 31:5 39:1
43:20 45:4,5,6,15
74:2 139:6 140:18
141:15 144:20 145:4
145:11 146:18,20
147:1,9
investigations 4:1
47:16 52:22 83:20

144:22 147:1,4
investigative 4:12 8:14
10:14 84:19 139:10
investigators 20:14
21:7 44:10
invite 7:15 63:14,19
invited 65:20
involve 149:10,15
involved 19:13 35:5
49:13 50:10 54:2,10
57:1 60:20,22 62:2
124:4
involves 50:15
Ironically 55:15
ISO 43:10 74:20 75:18
99:21,22 100:11
isolate 25:17
issue 4:7 14:12 45:3
51:10 55:6 57:8 106:6
133:14 145:10
issued 64:20 72:19
145:18
issues 5:5 8:18 21:16
45:9,10,11 52:10,21
54:4,9 55:10 82:10
124:15 142:12,20
143:7,9,15 145:1
148:21
item 20:5 96:20
items 42:9 43:17 50:7
58:6 61:10 80:2 96:10
96:10

J

J-E 134:15
J-O-E-L 132:6
Jael 72:3
James 53:14
January 1:7 16:10
139:16 147:1
Javonka 72:21
Jeff 123:9,16
Jerry 134:14,15
jet 33:2
Jim 72:20 115:4 116:18
job 19:16 96:12,12 97:2
97:3 122:8 128:11
132:15,18,20 133:11
136:8
jobs 88:21 132:15
Joel 132:5,5
John 72:22 90:21 91:1
Johnson 20:14
join 111:8 114:22
Joining 3:9,11
joins 141:13 150:12
joint 70:14 72:19 75:4
75:10 77:17 79:14

jointly 9:8
Jones 97:15
Jovanka 72:4 100:1
JR 1:11 69:20
July 73:9 81:19,20,21
147:4,9
justice 127:4
justification 88:11,15
88:22 89:1

K

K-A 109:9
K-I-L-B 123:16
Kaiser 130:13 131:6
Karras 109:7,8,9 111:3
Kate 120:9
Kathleen 118:13
keep 50:14 111:8 114:9
119:12,15 138:15
keeps 119:14
kept 105:20 110:9
key 17:2 21:13,19 24:14
28:22 30:22 31:10
34:6 36:8 40:9
Khan 120:8
Kilbreth 123:9,11,16,16
125:14
killed 100:13 132:14
kind 8:12 52:3 53:20
78:13 79:20 87:12
100:6 103:3 107:5
kinds 124:19
knees 28:8
knew 25:11
know 3:19 4:17 13:2
52:16,17,18 53:7
57:22 58:1 59:20,21
59:21 60:16 62:4
72:17 74:15 89:22
92:2,9 93:16 94:18
95:19 99:10 100:18
100:20 101:3,13
103:2 106:3,21
110:16 112:4,12,15
113:5 117:2,7 118:5
118:22 119:1,2 121:7
121:10 124:15,19
125:2 126:17 131:16
131:19 132:16 137:4
138:6,18 141:13
knowledge 31:16 34:12
101:18 111:18
known 26:12 29:16
31:19 65:4 142:3
KPI's 124:19 125:4

L

L-A-I-D-M-A-N 128:4

L-A-V 94:16
La 20:20
labor 65:21 92:14
lack 17:9 34:12 55:17
60:7
ladies 19:10
lagging 82:16
Laidman 127:21,22
128:1,3,4
land 126:2
language 38:2,3 40:14
73:2,14 74:10,13
75:17,22 76:1,19
121:3 127:17
large 4:19 27:21 99:15
larger 59:19
Larsen 118:12,12
Lastly 70:17 71:4
late 27:19
lately 120:15
latest 8:19
Lauren 20:14
Lavelly 94:13,16,16
law 67:1 105:14 111:6
laws 6:14 121:3,13
lead 20:13 57:20 59:2
134:11
leader 21:1
leaders 104:14 117:14
leadership 71:16 93:20
124:9
leading 69:21 82:16
leak 17:21 18:11,15
25:18,20 26:9,11 27:9
27:14 32:17 33:4,5,7
33:11 34:10,13,15,21
35:3,6,8,12,16,21
36:2,6 38:7,16,17,20
40:5,7,9,19 41:9,18
41:21 45:8 49:10
50:12 57:19 58:9,22
60:4 99:20 103:6
110:10
leaking 25:7 26:21
32:21 33:1 34:22
leaks 7:3,4 26:2 36:4
38:5,12,15 57:13
lean 117:11
learn 120:21,22
learned 19:18 53:1
95:11 110:4,4
learning 71:20 72:14
leave 10:6 62:7 104:16
led 9:10 21:7 24:17
34:14 47:4 53:15 59:7
left 3:10
legal 119:10
legislators 6:15

lessons 19:18 53:1
 59:22 95:11
let's 97:6 118:12
level 10:4 14:13 15:20
 16:1 55:13 60:14 61:3
 62:21,22 63:3 77:12
 89:21 95:4,4 101:8
 107:10,11 111:7
 119:13
levels 60:22 140:22
life 106:11 121:20
 128:17 133:18 136:6
 136:6
light 25:10 29:5 137:21
liked 20:15
limit 12:12 59:18
limited 56:8 65:2 66:3
 68:3 95:21
limiting 38:20
Lina 72:10
Lindsay 1:19 2:14
 63:22 71:9,11 76:10
 76:16
line 24:20 25:8 100:5
 106:8 110:3 128:8
lines 132:20 142:2
Lipo 138:21
liquid 25:4,10 27:15
liquify 121:10
listened 134:5 137:5
listening 123:7
little 50:6 80:19 85:1
 103:16 104:7 119:2
 127:2 133:1 134:7
 135:6 137:22
live 91:2 105:6 130:12
 148:17
lived 8:4
lives 35:9 100:18,20
 101:4 128:9,22
 133:19,20,20 137:22
living 122:22
lobbying 129:10
local 5:8,11 9:18 11:16
 70:2,4,20 80:13 81:2
 92:7 100:15 107:19
 115:12 116:17 117:3
 118:9 134:18
located 17:11
location 4:6 27:9 35:7
locations 19:21
locked 113:12
Loeb 1:15 3:13 140:4,7
 140:9 150:21 151:1,3
 151:5
long 8:6 85:20 120:14
 120:14 122:1
longer 122:3 131:3

146:5
look 6:21 13:19 15:7
 18:6,10 44:11 48:7
 53:9 63:17 77:10
 79:14 81:7 82:10,15
 84:9 93:12 94:2 96:4
 96:8 98:11 101:4
 114:6 121:20 127:9
 142:1 149:5
looked 7:4 53:11,16,21
 77:2,7 78:15,19 82:21
 89:20
looking 52:8 76:17
 77:22 79:4,5 83:16,16
 103:2 122:1,17
 142:11
looks 77:9 118:12
LOPA 77:13
lost 130:1
lot 12:9 57:12 60:13,21
 89:10 91:12 96:3
 97:10 103:7 110:17
 111:22 112:1,11
 118:6,18 120:14,18
 122:12 129:21 131:10
low 30:13 36:17 37:1
 39:15 40:2,17 41:5
 56:5 63:3 75:14 119:7
lower 9:11 42:20 60:13
 60:22 79:4 112:9
lubricants 29:12

M

M-A-R-T-I-N-E-Z 97:20
machine 107:8
maintain 98:10
maintained 34:4 132:22
maintenance 18:1
 56:17 88:6,6,14 89:7
 135:15
major 3:21 10:19 73:21
 73:22 74:2,3,6,7 84:1
 117:22
majority 143:1
maker 107:19
makers 111:6
making 32:13 33:9
 50:13 51:3 54:16 55:1
 57:11,21 58:10,15
 59:6 60:10,21 61:2,5
 63:5 66:19 79:7 91:19
 93:17 114:3 120:2
 129:22
manage 40:10 113:9
management 4:5 6:7
 14:10,10 15:1,19,22
 17:8 24:11 35:14
 42:15 45:11,12,18

46:5 47:5,19 48:6
 50:16,20 51:1,18,20
 60:14 62:16 63:17
 64:12 65:4 73:20 95:4
 96:13 97:4 100:12
 106:19 107:1,2 111:7
 117:11 124:21 125:8
 142:11 144:9,11
management's 116:6,7
manager 63:16,22
 64:11 71:9
managers 10:16 26:4
 52:14 55:13 60:20
 62:22 110:6 133:6
Managing 1:16 20:3
 90:14
mandate 10:3
Manny 1:11 2:4 3:11
 48:11
March 147:8
Marie 130:7,9
Mark 1:12 2:4 3:10 7:16
 7:21 13:15,16 20:14
 49:21
marshal 72:14
Martinez 72:5 97:18,19
 97:19
Mary 94:12
material 17:10 30:10,11
 30:20 31:21 37:17
 40:22 59:12 150:6
materials 30:3 46:14
 63:20 70:9 76:12
 93:10 111:14,22
matter 19:19 90:9
 100:20,21 101:1,3,4
 148:5,7,8 149:4
 150:11 151:17
matters 123:19 142:22
 149:7
mayday 28:14,14
mayor 7:9 43:3,8 71:21
 72:2,6 98:19
McLaughlin 72:6 98:18
 98:20 101:1
mean 53:11 54:14
 62:12 86:13 121:14
 131:5
meaning 101:12
means 70:22 118:5
mechanical 7:5,8 38:8
 41:14 42:10 52:11
 62:13 67:17
mechanics 33:18
mechanism 23:1,6
 29:16 42:13 49:3 66:5
 78:2,9 79:8
mechanisms 34:9

37:14 39:19 58:1 59:1
media 102:14,15
 119:13,19
medical 22:19 130:13
 131:1
meet 5:17
meeting 1:5 3:6,17,18
 4:11 12:20 14:14 16:2
 16:11,13,15,22 64:7
 71:14 79:6 91:6,13
 94:10 119:8 141:18
 148:18 149:11 151:15
meetings 4:22 12:19
 19:13 61:10 65:10,14
 65:19,22 75:8 79:13
member 1:11,12 2:4,4
 3:10,10 9:20 48:11
 55:11 72:3,4,4,6
 97:20 118:4 132:10
 134:18 148:14,18
 150:4,11
members 1:9 3:15 9:3
 11:6 12:1 13:14 22:7
 22:19 64:5 65:22 72:2
 72:20 76:15 91:8
 97:15 98:22 102:9
 104:2,15 106:10
 107:15 109:9 115:7
 115:21 126:4 139:22
 142:21 150:20
mention 104:21
mentioned 47:12 48:18
 48:21 52:8 56:19
 76:16,22
mentioning 44:15
Mescariolo 137:16
met 84:13 93:8
metal 26:12 44:14
metallurgies 30:5,6
metallurgists 62:5
metallurgy 30:19 54:8
metals 99:18
meters 121:18 122:15
 123:2
method 42:3 77:16
 96:22
methods 36:15 66:9
microphone 139:19
mid 114:9
middle 60:14
mike 87:9
milestone 140:20
Miller 16:21 17:7
mind 94:14 114:9
 142:13
mindings 114:22
minimum 38:3 39:14
 41:17 42:19

minutes 12:13 24:15
28:10 83:1 87:7 90:7
90:8 108:3 139:2
mirror 8:19
mission 143:20 146:10
mitigate 36:4 38:11
mitigation 35:4,22
mixed 27:6
model 85:8 98:9 141:7
models 15:14 16:4,7
modern 5:10 144:11
modernization 78:8
98:4 124:5
modernize 5:14 141:1
modified 56:22
modifying 148:16
moment 57:12 96:19
Monaca 145:15 147:11
money 105:9,9 112:11
136:19
monitor 36:15 78:1
113:8
monitoring 18:18
month 110:11
months 145:6
Mother 126:21
motion 139:8,17,22
141:20 143:21 144:13
144:19 145:7 146:7
147:21,21,22 148:1,1
148:5,7,8,10 150:9,10
150:14,15,17,18
151:12,13
motor 29:11
Moura-Eraso 76:15
Moure-Eraso 1:10 2:3
3:3,7 10:11 19:7 20:1
44:3,4 45:2 48:9
49:15 63:8 64:5 71:7
76:9 84:17 85:14 86:2
86:12 87:9 89:18
90:11 91:7 94:6 97:13
102:4 103:20 118:3
139:3,20 140:10,12
140:16 147:20 148:6
150:8,13 151:6,9
move 9:7 81:5 139:4,9
146:9
moving 20:2 26:16 90:6
131:21
mute 13:11
Myrick 72:3
mystery 110:19

N

N 3:1
N-O-M-P 104:11
Nadel 130:7

name 7:20 63:18 64:10
94:15 104:9,11,11
108:3 116:16 118:14
120:12 123:14 125:16
125:17,18
narrowly 9:1 22:17
Nat 72:3
nation 9:19
nation's 141:3
national 10:3 14:3,12
15:13 89:21 119:13
120:17
nationally 8:12
nationwide 14:1 19:4
114:18
Native 125:21
naturally 29:19
nature 85:6 87:2
near 20:21 25:3 96:7
130:12
nearby 28:4 130:15
131:5
nearest 131:2
nearly 43:1 100:13,14
124:8
necessary 18:1 35:21
need 13:6,8 14:4 15:15
15:21 23:4 44:11
54:17 95:16 96:5,14
109:16 113:13,15
125:4,4 126:12 127:8
127:9,10 133:3,5
134:9 136:13,13
137:12
needed 14:8 18:4
133:12 143:9
needs 55:4 96:15,17
102:22 103:1,7
136:12
negligence 126:21
127:5
negotiate 110:22
negotiating 124:5
negotiations 133:22
neither 23:20
Network 104:14
never 105:21 142:14
new 6:9,12 9:7 36:5
37:18 41:1 47:14
66:21 67:3,15,16
72:12 74:8 86:21 93:2
93:5,13 129:19 134:1
143:22 144:19 145:3
146:11,18
newly 24:3 67:14,21
newspapers 119:13
NFPA 120:17
Nice 98:18,20

nine 67:16
Nineteen 9:1
Nompraseurt 104:8,10
104:10
non 3:20 136:7
nonessential 59:18
normalization 50:8
normalize 141:20
normalized 32:16
normally 25:1
normative 41:8
norms 143:13
north 87:22 88:4
Northern 132:11
note 53:22 69:16
noted 46:17,17 47:1,2
50:9
notice 13:10 18:17
97:15
noticed 25:3
notification 103:8
notified 54:5 60:15
November 5:13 14:20
20:18 147:2
NTSB 144:8
nuclear 95:9,20
number 3:14 25:8,12
26:4 31:7,15 48:19
53:17,21,22 55:16
67:8 75:19 94:11
126:11 128:18 139:10
142:12 143:22 144:14
145:6 146:19
numerous 5:20 144:1
nurses 130:11,11,14
131:19
nut 87:12

O

O 3:1
Obama's 9:14
obscured 27:10
obvious 138:2
obviously 19:12 49:10
62:3 108:10
occasions 31:17
Occupational 66:15,17
occupying 126:2
occur 36:6 46:7 79:5
136:22
occurred 4:10 16:16
18:6 32:22 45:7 80:5
97:10 139:12
occurring 29:19 57:13
occurs 61:16 96:2,5
October 23:13
OES 79:18
office 1:16 2:8 7:17
11:8 20:8 66:22 79:18
officer 49:4 68:2,6
officers 67:16,21 68:15
70:7
offices 149:17
official 12:16 114:14
officials 42:15 63:1
oftentimes 110:15
oil 25:10 29:5,8,19,20
36:11 39:13 67:3,8
110:6 113:11 114:12
114:21 121:7 132:10
132:16 137:4
okay 87:11 89:1,2 90:11
91:9 97:6 120:7,8,9
127:20 130:7 137:16
138:21 140:12 151:9
151:11
old 145:8
once 8:7 71:13 116:11
145:4
ones 3:16 130:14
ongoing 83:11
open 27:19 43:22 65:22
88:20 89:2
opening 2:3 11:5,5,6
13:14 82:4
openings 82:5
operate 26:20 50:11
103:5
operated 25:8 132:22
133:19
operating 17:12 25:1
34:22 68:10
operation 32:16 33:5
33:10 49:5
operational 16:22
operations 35:13 51:3
90:1 99:19,20 131:12
141:22 146:11
operator 25:2,18 26:7
132:7 134:4,17
operators 28:5 33:18
134:22 135:15
opinion 143:7,18
opportunities 9:7 46:12
50:1,3
opportunity 10:15
11:12 14:16 21:22
22:7 64:6 84:19 89:5
145:10 148:20 150:5
opposed 58:15
order 14:6 106:20 133:4
143:22 144:14 146:11
146:15,16,19 149:14
orders 143:2,5 144:2
146:13
ordinance 8:11 9:19

43:10 73:7,9,10,12
74:14,16,19,20 75:1
76:17,21 77:3,5 80:9
80:18 81:16 82:8 83:3
83:5,9 84:10 92:8
93:7,11 94:1 105:18
105:18 129:17,22
Ordinances 92:6
organization 6:21 61:1
61:3,21 63:3,5 103:22
118:7 129:8 142:15
organizational 16:17
17:14 18:8 21:16 31:1
31:9 54:1,13 60:11
61:18,19
organizationally 55:9
organizations 22:5
65:13
organize 134:11
organized 126:5
organizer 132:12
organizing 108:17
originally 122:19
OSHA 14:6,9
OSHA's 15:15
ought 97:17
Outreach 7:16,22
outside 121:15 137:22
outstanding 19:16
72:15 142:7
overall 61:14 75:11
overhead 25:6
overridden 17:16
overriding 55:3
oversee 43:16 70:6
92:15
oversight 43:12 51:2
55:12 61:4,14 62:16
64:16 69:22 80:15
81:2,15 92:13 100:4
100:10
overwhelming 59:14

P

P 3:1
P-A-Y-N-E 115:8,9
p.m 3:2 28:9
Pacific 104:14
package 82:22
PAGE 2:2
pain 101:21
panel 2:12 6:2 11:21
12:2 15:8 22:2 63:10
84:21 85:3,16
panelists 11:15 15:4
paper 119:16 127:2
paperwork 5:17
paragraph 137:6,6

paramount 8:22
Parker 125:19
part 12:13 29:7 46:4,19
60:21 73:5,20 82:21
84:3 98:12 101:5
111:3 119:4 129:17
131:21 146:11,14,17
146:22
PARTICIPANT 151:7
participants 33:21
participate 16:13 64:6
75:9
participated 65:9
participating 16:7
participation 66:11
75:4
particular 15:16 25:15
63:12 72:10 73:13
particularly 130:21
131:11,19 135:9
parties 9:6 47:10
100:10
partly 111:20
parts 110:1 146:7
party 92:20 128:1,5
132:12
passed 6:15 86:21
95:14
Path 15:20
Paul 94:13
Payne 115:5,5,6,9
116:18
pays 117:9
PCC2-2011 41:15
Pennsylvania 145:15
147:11
people 7:12 12:9,11
18:14 28:3 35:20 51:4
57:10,11 59:18 62:1,4
62:15 82:4 90:4 94:21
101:2 103:15 110:6
111:4 113:16 117:19
118:1 124:1 126:4,14
127:3 129:19,20
130:15 131:16 133:20
135:15 136:18 138:8
perceived 55:17
percent 31:20 32:9 37:1
54:7 81:17,20,21,22
114:1,6 135:10
percentage 67:9
perform 32:8 36:22
73:15 74:11 78:4
79:21
performance 82:17
performed 47:11 69:5
performing 25:2 46:11
period 30:15 31:14

143:2
permanent 143:4
permission 112:2
permissive 38:3,13
permit 113:20
permitted 3:16
person 84:20 125:20
personal 42:6
personally 71:4 104:22
118:6
personnel 31:15 34:16
34:20 35:13,18 38:21
49:12 54:11 67:14
69:5 143:10 144:12
perspective 109:19
142:2
pertain 15:12
pertaining 65:11
Peter 120:10
Peterson 120:11
petroleum 7:7 23:15
24:11 36:9 39:7 43:5
43:11 64:21 65:11
68:3 70:1
Ph.D 1:10
philosophy 144:8
phones 13:11
phonetic 118:13 120:8
120:9,10 130:7 137:1
137:16 138:22
phraseology 100:19
physical 4:2 17:10
pick 88:16 105:8
picked 88:1
picture 121:21 133:4
pike 26:13,18
pin 26:8
pipe 22:13 25:5,7,16
26:9,16,19,21 27:1,13
27:16,19 28:1 29:17
30:9 31:12 33:1,4
35:9 54:17 112:5,12
121:2,5,14,15,21,22
122:1,9 139:11
pipes 96:3 113:1 114:7
121:13
pipng 5:6 17:16,18
22:13 29:3,13,15,21
29:22 30:10 31:19,22
32:10,20 34:10 35:1,6
36:17,19 37:8,12,16
37:18 39:16 40:2,11
40:13,18 41:1,3,7,16
44:14 45:8 46:21,21
56:5 78:16,18,21 79:5
83:21 99:18 121:4
place 3:17 18:19 32:14
34:1 46:6 52:1 78:14

78:20 100:11 104:4
108:13 109:19 113:12
115:22 149:15
places 132:18
placing 32:21
plan 79:1 80:7 131:21
planned 68:6,8,19
110:12
planner 72:11
planning 14:10 32:6
58:14 95:9,10 97:21
98:3 129:18 144:22
plans 78:20
plant 50:11 52:17 54:5
54:11 55:13 60:14,20
95:15 146:5
plants 114:12 149:22
plaque 119:1
play 24:18 52:6
played 55:9
please 7:18 13:10,11,16
20:5 21:11 64:3 104:9
108:2,3 111:8
pleased 10:21
pleasure 117:6
plume 4:20
plus 132:9 134:19
point 19:14 26:8 61:2
103:11 113:16 119:5
119:19 134:8
pointed 16:22 45:16
52:4
poised 141:1
poisons 110:13
poke 138:2
poking 26:15
pole 26:13
policies 36:2
policy 105:14 107:19
107:21
political 129:3,4,7
politics 117:21
pollution 124:17
poor 49:20
population 126:2
Porte 20:20
portion 11:22 32:10
94:19
posed 136:21
position 51:20 82:10,13
possible 16:13,17 18:8
possibly 94:20
postponed 96:21
potential 32:12 34:9,11
34:13 35:16 38:17
40:11 56:5 58:21,22
75:8
potentially 78:16

power 51:17 95:9,20
97:6 108:12 133:13
135:12 136:15,20
PQV 69:3,8
practicable 75:14
practice 26:1 36:9
45:16 55:19 60:3
74:14 112:16
practices 10:3 17:11
37:10,16 38:10 41:7
42:5 69:13 144:7
148:17
precautionary 101:10
prepare 73:8
prepared 146:1
presence 33:11 68:14
present 1:9,14,18 4:12
11:8 12:7 20:16 24:14
37:7 38:6 50:12
presentation 11:11,22
13:19 21:18,21 43:19
50:5
Presentations 2:12
presented 29:2 30:7
65:14 150:17
presenting 10:20 20:9
21:1,13
President 9:14 116:18
President's 14:5
press 10:22
pressure 27:14 41:16
111:21 129:7,10
pressured 116:1
pressures 57:12
presumed 134:8
pretty 59:13 61:21 84:5
88:17
prevent 4:9 5:6 6:10
23:22 31:12 32:12
40:1,17 44:12,22 61:8
130:19
preventable 8:6,18
prevented 108:11
preventing 10:19 39:14
75:19
prevention 81:17 106:8
106:17 141:3
previous 6:20 92:3
previously 62:19
primarily 21:16 123:22
primary 36:14 131:1
principle 72:11 101:11
principles 17:3,7
101:10
prior 31:14 42:19 45:5
46:2 47:11 68:2 88:3
88:12
priority 8:22 55:5

private 48:16 85:19
142:1 144:9 149:17
proactive 85:6,10 86:17
probably 13:2,9
probation 69:18
problem 26:6 96:1,1,6
99:13 105:7 136:2
problems 56:20 89:22
95:12 107:7 120:19
procedure 48:20
144:20 145:5
procedures 68:10
133:6 143:1,9 144:15
proceed 21:11 119:6
139:5 150:21
proceedings 7:14
13:12
process 5:16 6:7,12
14:4,7,9,22 15:19,22
23:7,18,21 24:8,10
29:8 33:2 34:17 35:15
38:5,7,12 40:5,7
41:17,21 42:5,8,11,17
43:5 45:20 46:5,6,19
47:6,14,14,15 50:17
50:18 52:21 53:18
58:7,12,14 59:11 60:4
61:15 62:7,20 63:1,2
63:16 64:11 65:4,11
66:19 71:2,6,15,20
73:5,19 74:8,22 76:4
77:11 78:14,22 79:9
79:10,12,12 82:3,10
82:12,15,16 83:17
84:3 92:19 96:10
116:5 117:10 134:3,5
134:22 141:1 144:21
146:5,20
processed 67:9
processes 29:11 59:1
73:17 74:8 78:11
produce 29:11
produced 1:22 142:6
product 121:4 123:5
136:19
production 25:22 51:1
productive 120:1
productivity 9:11
products 5:1 29:12
45:22 121:7 139:14
142:6
professionalism 91:17
professionals 142:10
profits 110:8 128:15
132:20 137:9,10
profoundly 99:9
program 12:13 17:1
37:18 40:22 41:2

63:21 65:5 67:7,19
68:20 69:10,11,14
70:5,7 75:5,10 76:12
79:14 81:17 95:11
96:1 98:12 144:16
146:15
programmatic 143:16
programs 54:3 117:12
progress 15:5 86:7,11
141:5
progressive 117:14,21
progressives 129:21
project 78:6,8,10 98:4
113:22 115:2 124:5,7
prominent 104:4
promise 60:6
pronunciation 104:7
proposal 116:11 144:16
proposed 21:20 39:2
40:19 41:12,22 42:22
44:2 65:16 66:2,14,21
73:13,21 75:15
109:12 116:3 145:5
proposes 39:11,18 40:3
40:8,12,21 41:6,14
42:2,7,16
protection 9:20 23:11
40:4,20 41:11,19 51:4
77:8,9,12 120:18
protects 130:1
protocol 35:12 36:3,5
40:6,10 41:10 57:16
57:19 58:3,9 145:4
146:19
protocols 60:4
proud 117:20 132:9
prove 85:21 113:17
140:19
proven 133:8
provide 12:8 18:19 22:4
35:12 37:20 38:10
39:22 40:16 42:11
67:6 76:4 87:15 88:5
105:14,14 107:18
109:17
provided 1:22 70:3
104:1
provides 9:7 58:4 68:1
144:13
providing 105:1
provisions 52:1 134:2
proximity 18:15
PSM 15:16 62:1,6,13
65:16,20 66:2,12,14
67:2,7,13,16,18,20
68:10,15,18 69:4,10
69:17 70:4 87:4,4,15
PSM/OE 61:20

public 1:5 2:18 3:5 4:22
12:5,14 15:21 22:8
64:6,15 65:13 66:1,19
71:14 83:7 90:4,15,20
91:13 92:15 103:8
141:18 146:2 147:12
149:12,19 151:15
published 37:9 38:9
puddle 25:3
pull 26:14
pulled 135:19
punch 110:3
puncture 26:18
purely 143:7 144:2
purities 120:22
purpose 4:11 75:17
purposes 80:10
pursuant 141:16
pursued 145:2
push 9:14
pushing 149:18
put 3:18 27:7 34:16
38:22 55:4 74:14 82:7
83:3 84:8,22 88:7
99:8 104:19 107:11
115:22 121:17 122:19
141:2 146:6 149:14
putting 51:2

Q

Q-U-A-N-A-H 125:17
quality 68:20 69:11
112:9 113:11 124:20
125:8 131:17
Quanah 125:14,18
quarter 128:19
question 44:6,18 46:22
48:14 60:5 86:13,18
87:2 110:20 115:21
137:8 140:1,4 148:9
150:16
questions 2:10 11:13
12:1 16:8,16,20 18:4
18:7,8 21:3,22 44:1
48:12 49:18 57:20
84:21 85:2,16 86:6
124:21 135:1
quicker 114:17
quickly 27:7 59:8
quite 51:11 127:2
149:10
quoting 17:3

R

R 3:1
R-A-S-E-U-R-T 104:12
R-E-B-E-C-C-A 137:19
R-E-T-H 123:17

R-I-T-T-O-N 132:7
R-R-A-S 109:10
R-R-Y 134:16
R7 47:9
radioed 28:13
Rafael 1:10 2:3 3:7
railroads 133:19
raised 16:10,16 64:20
rally 102:17
Randy 1:20 2:15 63:20
 63:21 76:3,11 93:9
range 82:1,2
ranking 30:17
rapidly 27:20
rarely 129:7
rate 30:2 36:19 113:7
rates 9:11
Rating 37:13
rational 116:6
Razor 123:8,9
reaching 124:13
react 29:21
read 5:5 93:2 123:20
 148:2 150:19
readily 10:16
reads 8:4 139:8
ready 3:4 75:9
real 117:19 133:10
 137:8
realistic 145:10
realize 25:14 127:8
really 48:14 62:2 71:18
 72:17 76:3 80:8 85:5
 88:22 99:2,5,12,12
 102:22 103:3 106:7
 106:16 116:11 126:6
 128:10
reason 111:4
reasonably 73:22 74:3
 74:6 75:14
reasoning 119:11
Rebecca 137:17,19
rebuild 113:10
rebuilt 47:14
rebuilt 112:4,6
receive 67:21 87:19
received 28:15 118:22
recognition 12:10
 104:3
recognize 7:11,15
 13:13 94:17 141:9
recognized 21:10 69:12
recommend 37:2 105:4
recommendation 24:9
 26:7 39:6,17,18 40:3
 40:12,21 41:6,13,15
 41:20 42:2,7,13,14,16
 47:8 58:8 60:2 77:21

78:3 81:7 82:14,18
 84:7,16 100:5 115:17
 116:9 119:6 146:15
recommendations 2:6
 4:8 5:22 6:19 7:6 11:2
 12:17 13:21 14:21
 19:1 21:20 22:11 23:9
 24:15 31:12 32:1,8
 39:3,5,8,11 42:1,10
 42:22 44:2 46:9 53:12
 54:6,16,20,21 55:21
 56:10 60:10,15 61:15
 65:15 72:16 73:3 75:3
 77:1,1,20,22 82:6
 83:17,18,19 86:16
 91:20 92:3,22 93:3,6
 93:12,14,18 98:4,5,8
 99:17 101:6 107:20
 109:12,17 115:11
 131:14 135:8 137:4
 139:14 144:16 145:19
 149:16,20
recommended 31:17
 36:9 37:10 38:10 42:8
 53:13 60:3 62:19
 73:18 92:6 131:11
 146:17,20
recommending 62:3
recommends 74:2,6
record 90:10 109:10
 140:2 151:18
reduce 23:22 30:6
 75:13
reduced 9:10
reducing 5:16 75:19
reduction 24:12 124:16
 124:17,22
refer 39:21 56:18
reference 41:9 44:13
referrals 68:8 70:13
referred 30:5
referring 62:2 133:14
refine 107:8
refined 127:13
refineries 5:9,16 6:8,17
 9:12 14:1 19:3 23:1
 23:15 24:12 36:11
 39:13 40:4,20 41:11
 41:19 43:6,11 53:16
 53:22 64:17,21 65:8
 65:17 66:21 67:4,6
 68:3 70:1,16 87:14,20
 87:22 88:1,4,4,16
 89:12 92:11 95:11,13
 109:2 114:7 121:8
 122:5 126:15,19
 127:14 131:18 132:16
 132:17,21 133:18

refinery 1:3 4:14 6:13
 8:5,6,16 17:13,17
 20:11 22:12 26:2
 29:10,22 33:10,13,16
 34:3,4 35:13 36:4,7
 45:20 50:2 53:8 55:4
 59:1 60:3 61:9 64:13
 64:19 65:1,3,11,12
 67:7 68:6,11,19,21
 69:20 70:8 75:7 78:11
 78:16 79:13 80:15
 82:11 86:22 87:12
 92:17,22 93:22
 101:20 108:12 111:19
 114:2 116:3 117:18
 122:19 125:9 130:12
 130:16 131:3,9,12
 132:8,9 134:17
 135:14 136:4 139:7
 139:11 145:12,14
 147:3,6
refinery's 32:5 89:1
refining 29:8 37:15
 39:20 53:19
reform 14:4,7 15:13,19
 15:22
regard 61:18 137:22
 143:5
regarding 8:15 21:22
 54:16
region 7:12
Regional 1:16 2:8 11:8
 20:7
regular 30:14
regularity 135:5
regulated 95:20
regulating 15:10
regulation 16:5 69:4
 75:8 86:21 87:3 89:19
 125:9
regulations 4:4 6:9
 15:1 23:19,21 24:2,11
 43:10 65:4,6 66:14
 89:10,14 131:17
regulator 43:13
regulatories 81:9
regulators 141:5
regulatory 3:20 5:11,15
 14:7,17 15:9,13,18,22
 22:2 23:12 63:10 65:6
 71:3 75:5,10 79:14
 81:6 82:22 104:1
 135:21 136:14
reinstitution 98:7
reiterate 140:18
reject 88:9
rejected 32:8 54:20,21
 55:17 61:9,11

rejecting 56:9
related 4:3 9:3 11:16
 31:4 42:9 45:11 46:20
 55:11 144:2
relates 86:22 87:3
relating 39:9
Relations 6:4,5 67:5
 82:20
relationship 51:17
 103:11
release 10:22 22:17
 65:5 74:1,4,7 75:13
 81:17 147:5,8
released 5:1 23:2,3
 93:1,3
releases 18:21 66:7
 75:20 145:13
reluctance 33:12,18
rely 113:9
remained 32:3 33:5
remaining 27:10
remains 135:1
remarkable 118:19
remarkably 142:8
remarks 16:21 140:17
remind 126:14
remove 26:22 32:20
 35:7,17
removed 29:4 46:18
removing 26:9
repair 33:3 37:14 41:16
repaired 33:7 52:19
repairs 41:21 47:15
 52:12
repeatedly 135:21
replace 17:16,18 30:19
 32:9 112:12 128:17
replaced 59:12 114:8
replacement 54:17
 135:10
replacing 78:21 112:22
report 2:20 4:13 5:2,4,4
 5:10,12,13 6:18 7:6
 8:19 9:5 10:20 11:9
 11:10 12:15,16 13:19
 13:21 14:15,17,17,21
 15:8,18 16:14,19 19:1
 20:10 21:5,14,19 22:1
 22:10 23:3,8,12,12,17
 29:1,2 30:22 31:5
 43:20 44:1,11 46:7,8
 46:17,18 48:18 50:4
 52:5,21 53:15 54:2,14
 58:4 60:6,19 62:20
 64:8,18,22 65:15
 72:19 74:2,5 81:6,7
 84:7,14 93:4,10 94:22
 95:1,5 104:1,20

107:18 108:21 109:12
 117:5 124:13 125:6
 127:2 130:18 131:11
 133:1 134:6 135:9
 137:20 139:6,10,16
 140:14 145:10
reported 34:3 60:11
reporting 33:21 84:11
reports 5:22 6:20 8:19
 23:2 31:7 44:8 45:3
 71:1 75:4 83:22 84:1
 91:22 92:3 123:20
 133:9 134:20 145:19
repository 79:20
represent 91:2 115:14
 130:11
representative 101:2
 118:20
representatives 11:18
 22:2 43:14,14 65:21
 70:5,6 92:14
representing 7:21
 71:21
reputable 99:4
request 14:8
require 6:9 23:4 24:4
 36:5,12,22 38:14,20
 40:5,18 41:1,17 43:11
 45:17 142:13
required 9:3 68:12 88:5
requirements 5:18
 24:13 38:3 39:14
 41:10,18 74:20
requires 67:5 73:14
 74:11 150:14
requiring 66:9 83:3
 87:8
rescind 146:14
rescinds 144:1
research 95:22
researchers 146:6
reset 123:14
resetting 42:19
Resident 137:18
residents 4:20 100:15
residual 112:7
resistant 37:4 99:18
 111:14
resolution 144:18
resounding 151:4
resource 68:4
respect 10:13 12:11
respective 85:12
respond 38:11 62:9
responded 34:21
responders 18:13
 34:14 35:14
responding 26:1 35:10

38:5,7 68:7
response 5:21 6:22
 18:11 21:17 22:5
 28:15 31:2 32:18 34:6
 35:4,12,22 36:3 40:6
 40:9,10,19 41:10,18
 41:20 48:17 56:12
 57:14,19 58:9 63:12
 116:6 138:1
responses 7:3
responsibilities 143:16
responsibility 49:5
 142:16 144:5
responsible 126:20
 142:20
rest 85:8 131:13
restructure 24:10
result 24:8 43:18 73:22
 74:3,7 108:13 111:20
resulted 20:19 29:14
resulting 4:19 8:9 35:8
results 11:9 12:16 53:4
 147:13
retaliation 134:7
retired 134:17,18
retool 113:11
retribution 52:3
review 29:1 30:21 42:18
 47:5,12 53:15 58:14
 73:21 78:7,9,12 79:2
 87:21,21 88:21 89:8
 96:3,18 147:13 150:6
reviewed 5:11 145:22
reviewing 96:10
reviews 23:6 66:6 78:3
 79:8 113:18 146:3
 147:17,19
revise 39:12,18 40:4,22
 41:7,15 43:9
revised 67:2
revising 76:18
revisions 6:6 65:3,16
Richard 1:15 3:12
Richmond 1:3,19 2:14
 4:14,21 5:20 7:10
 8:16 10:1 11:20 13:18
 15:3,5 16:11 17:11
 19:2,12 20:10 22:4,12
 23:9 32:5 33:13,16
 34:3 43:3,9,20 46:10
 53:8 64:1,13 69:20
 71:10,14,21 91:2,5,12
 92:4 94:4 98:14 99:2
 99:4,22 101:2,7,8
 102:3,10 104:21
 108:14,18,20 113:14
 114:17,17 117:19,20
 119:14 124:2 130:13

131:6 133:8 137:18
 138:18 139:11,13
Richmond's 76:21
Rick 120:11,13
ridiculous 103:3
right 3:9 4:14 17:6,11
 35:20 55:14 58:18
 61:21 63:19 81:10
 91:7 102:20 105:17
 105:17 109:17 110:11
 110:20,22 116:10
 118:9 121:21 123:10
 125:9 134:2 148:17
 149:2
rights 99:19 116:7
 131:12
rigorous 9:14 23:5
rigorously 48:6
ripped 27:19
risk 6:11 14:10 24:1,12
 30:7 37:3 49:8 75:13
risking 128:9
risks 5:16
road 114:3
robust 24:12
Rogers 72:20
role 19:17
room 13:1,7 90:19
 131:2,7 138:5,16
root 44:18 66:6 74:5
 91:18 117:8
routine 25:2 143:12
RP 40:4
rule 66:19
rules 5:9 6:6,13,16 57:4
 125:9 141:2
run 56:17 107:9 109:3
 110:6
running 17:22 26:10
 50:14 56:17 57:4
 110:9
rupture 22:13 29:13
 34:12 35:9 39:15 40:2
 40:17 139:11
ruptured 28:1

S

S 3:1
safe 35:17 109:13 110:5
safeguard 77:8
safeguards 23:7 66:10
 77:10
safely 38:11 109:3
safer 5:10 23:5 24:5
 30:6,16,18,20 44:11
 44:22 46:11 47:6,10
 48:8 73:15 74:12 77:3
 111:15 128:11,11

131:9 141:9
safety 1:1,9,11,12,12
 1:22 3:6 4:5,7 6:7,11
 6:13,16,21 8:11,13,14
 8:20 9:6,8,9,12,15,19
 12:20,22 13:6,22 14:4
 14:7,9,22 15:19,22
 16:4,6 17:2,4 18:9
 19:2,4 20:3 23:18,21
 24:8,11 28:19 31:1,9
 33:15 38:14 42:5,6
 43:5,10,18 46:13 49:4
 49:20 50:1,17,19 51:1
 51:3,5 52:9,21 53:14
 53:19 55:5 57:8 62:20
 63:1,2,16 64:7,12,16
 64:19,21 65:3,4,12
 66:4,15,17 71:13 73:6
 73:7,11 74:15 75:7,12
 76:17,21 77:2,5,8
 80:9 81:16 82:10,16
 82:16 83:4,9 84:9
 85:10 91:5,11 92:5,8
 92:16,21 93:7,11,21
 94:1,4 96:10 98:9,10
 98:12 106:7,15,16,17
 113:19 117:10,11
 124:15,17 125:5
 128:13 129:17,22
 132:1 133:6,8 134:2
 134:20,22 137:8,9
 139:9 140:21 141:1
 144:15 146:13
salaries 81:14
salary 82:1,1
sands 127:12
Sante 132:9
sat 78:12
satisfied 105:19
satisfying 86:15
save 110:17 128:22
saw 118:20
Sawyer 1:20 2:15 63:20
 76:3,11,13,14 84:18
 93:9
saying 93:15 103:2
 105:20 114:22 133:1
 138:10,12
says 3:22 75:17 91:12
 113:5 114:6 115:20
scaffolding 26:20 27:9
scenario 38:16
scene 25:18 26:3
schedule 88:7
scheduled 87:16
schedules 87:17,19,21
 87:22
school 120:21 122:8

scientists 17:10
scope 58:21 135:19
scoping 144:21 146:20
screaming 105:5
screen 39:6
searching 124:10
seated 150:5
Sebenza 120:9
second 5:10,13 14:17
 17:5 23:12 81:6 88:19
 103:22 111:11 116:1
 128:16 139:18,21
 144:13 147:22,22
 148:2,7,8,9 150:14,15
Secondly 149:1
secretary 115:13
section 15:17,18 25:7
 30:9 80:18
sections 75:18
sector 4:10 48:17 53:19
 85:20 142:1 144:9
see 8:5,17 28:6 30:13
 78:13 86:16 95:2,10
 95:15 98:19,20,21
 99:7 105:3,8 107:3,9
 110:11 114:13 118:19
 119:13,20 126:19,22
 129:7,11 131:10,17
 131:21 138:3,15
 149:21
seeing 131:8
seek 4:21
seeking 39:8
seen 109:21,22 135:15
 149:3
segment 25:15
Segundo 132:8
semi 122:5
Senate 87:7,11 89:6
 148:14,19
sense 131:13
sent 26:2 100:14
 130:15
sentiments 85:18
 129:14
separating 29:9
September 87:13,18
sequence 24:17
series 145:13
serious 20:19 22:18
 25:20 64:12 131:4
seriously 92:4 124:4
service 32:3
services 74:18 79:19
 131:2
sessions 78:13
set 39:8 123:4 144:11
sets 83:5

setting 57:1 58:10 85:8
seven 66:10 **severity**
 75:20
share 79:14,19 80:21
 81:1
shared 12:7 101:18
 126:12
sharing 21:19 70:19
sheet 12:5 90:18
shell 87:13 115:15
 122:21 134:17
Shells 136:16
Shepherd 72:13
shop 138:10
short 12:3,4 103:9
 120:4
short-term 110:8
shortcomings 23:18
shortly 84:12
show 117:13
showed 33:17
shown 30:8,10 71:16
 129:5
shows 30:8 60:7
shut 18:12 25:16 26:7
 27:18 33:4,7 36:6
 38:21 50:14 57:21
 58:2,11 59:8 99:19
 101:20 108:12 110:10
 110:21 116:5 123:3
 134:2,5
shuts 123:6
shutting 17:22 25:21
Sibley 120:10,10
side 69:16 97:7 119:22
sidecut 25:13 30:10
sign 139:1
signed 12:10,11 90:4
 90:19 94:9 97:16
 136:3
significant 23:14 33:17
 34:13 47:14 53:18
 66:7 104:22
significantly 30:15 33:6
 68:15
signing 94:10
silicon 30:13 36:17,19
 37:1 39:15 40:2,17
 41:5 56:5
Silver 145:12,17 147:3
similar 4:9 25:11 32:15
 32:22 36:6 45:9 52:20
 95:13
simple 111:12
simply 5:17
single 68:5,11 136:5
sir 94:14

sit 63:18 88:22
site 13:22 38:20
sitting 137:5 145:6
situation 25:19 112:4
situations 136:7
six 66:9 68:18
Sixty 88:3
slide 30:8
slightly 109:18
small 25:3,20 26:18
 31:15 94:19 131:22
smaller 147:7
smile 118:19
smoke 4:19
smoothly 143:19
snapping 125:3
Socialist 132:12
Society 7:8 38:8 41:13
solidarity 128:7
solidification 142:14
solvents 121:9
somebody 61:3,13
soon 75:10 93:1 123:5
sooner 59:2
sophisticated 17:8
sorry 87:10 91:9 147:18
sort 47:5 48:5,8 57:1
 124:22
Soto 102:7,8 103:21
sought 22:19
sources 73:15 74:11
 81:3
south 88:1,4
Southern 92:11
spaghetti 60:8
speak 22:8 97:18
 117:17 123:17,21
 127:16 139:1 148:20
speaker 135:7
speaking 44:7
specific 39:22 40:6
 49:22 50:3 54:1 55:7
 95:22 109:18
specifically 4:8 36:22
 50:21 51:13 73:16
 75:4
specifics 140:17
speed 141:4
spell 94:15 104:9 108:2
 123:13
spelled 125:17 130:10
spent 112:11 141:22
 143:19
spoke 135:7
sponsored 69:6
spray 27:15
spread 28:2 60:1
spring 16:2

Springs 132:9
staff 1:14 3:15 12:1
 13:20 18:7 33:16 64:5
 67:15 71:17 72:9,10
 73:1 87:20 93:20
 98:22 104:18 106:19
 109:21 113:4,18
 114:6 115:7 142:6
 143:4 144:17 145:5
 145:21 146:3,17,21
 147:12
staff's 109:11
staffing 67:13 76:5
stainless 30:17
stakeholder 65:10
stakeholders 73:8
stand 116:20 117:22
 129:9
standard 15:16 26:1
 65:17 66:2,12,21 67:2
 68:10 76:2 143:8
standards 4:4 7:3,5
 8:13 9:6,8,9,15 14:11
 21:17 31:2 36:8 37:7
 38:2,9 39:9,22 66:15
 66:18,20
standing 108:19 116:19
 128:6
stands 72:17 137:10
start 3:5 64:3 91:4
 138:14
started 18:16 27:15,22
 44:5 54:14 122:9,20
starting 145:14
state 5:8,11,14,19 6:4
 11:15 15:1 23:10 24:9
 70:1,20 82:19 87:14
 89:8,11,16 92:11
 107:19 111:5 126:15
 128:5 136:15 141:2
state's 64:21 65:3 67:3
 67:10,12 68:3 75:6
stated 7:20 150:14
statement 7:13,17 8:4
 10:7 11:5 12:21 87:6
 118:6
statements 2:3,22 11:5
 11:6 13:14 22:6 64:2
 86:14 90:4
states 36:16 53:17
 132:14
statewide 64:11
static 24:2
stationary 73:15 74:11
 81:3
statistics 132:13
statute 144:7
stayed 122:6

steam 120:20
steel 29:21 30:1,14,14
 30:17 36:17 37:3,3,8
 39:15 40:2,18 41:3
 115:5,12 116:15,17
 117:2 128:7 133:22
steels 30:4,16
step 58:5 123:10
 131:22 136:12,13,13
stepping 119:22 127:9
steps 85:10,12 118:21
 135:21
Steve 20:15 130:7
stick 138:3
stock 29:10 44:17,21
 45:14,19 111:13
 112:1
stone 127:9
stop 26:11 33:14,19
 45:10 48:20 49:10
 51:7,8,15,16,19,22
 52:16 97:2 102:21
 108:8 115:17,20
 116:5 127:6,7,12
 131:12 133:10 135:8
 135:10 136:11,22
 138:12
stopped 112:19
stopping 25:22
stops 123:3
store 115:1
strategies 35:22
strategy 35:4
streamline 144:11
Streamlining 146:12
streams 29:9
strengthen 39:9 65:6
strengthening 99:21
stress 57:13
stricter 131:17
strip 27:13
stripper 46:19
stripping 35:5
strive 124:22
strong 52:1
stronger 76:1 111:9
 113:2 129:17 134:1,1
 134:9,10
strongest 6:16 8:13
 92:7
strongly 102:20
structure 34:8 48:22
 49:4 142:3
structured 66:9
struggle 104:7
struggled 28:5
study 141:5
studying 124:4

stuff 79:22
Subcommittee 9:21
 99:22
subject 59:10,11
submitted 66:22
submitter 42:12
submitting 66:14
subsequent 14:8 147:7
successful 120:1
successfully 69:6
suddenly 27:14,19
 28:12 135:18
suffering 101:21
suggestion 111:10
suggests 32:15
sulfidation 22:22 29:16
 29:17 30:2,7 31:13,16
 36:10,16,18 37:4,8,11
 37:21 39:10,13,21
 40:11,15 41:4 48:2
 54:7 56:4 59:3,14
 61:7 78:17 79:4 113:6
sulfide 47:21
sulfur 29:19,20 44:16
 44:20,21 46:15,20
 47:3,20 112:10,20
 113:5 114:1,15
 138:11
summarizing 21:2
super 112:7
supervisor 8:8 105:3
 105:13 124:11
Supervisors 43:2,7
 72:22 81:11 90:22
 91:3
support 8:14 9:13 67:6
 67:18 99:16 102:20
 106:13 108:6 116:19
 117:1,13 118:6
 133:21
supports 109:11 117:3
 122:1,2
suppose 97:17
supposed 83:13
sure 5:15 13:9 51:4
 61:6,16,21 62:17 79:7
 80:16 96:5,11 100:10
 101:9 104:17 109:2
 113:18 118:14 149:21
surprise 95:19
surprised 95:10
surrounding 19:5
 133:21
survey 53:4
surveys 33:15 34:2
 51:6 52:9,18
susceptible 37:8 41:4
suspect 109:15

sustainable 109:3
sway 116:9
switch 113:10
switching 111:20
system 4:5 5:11,15
 35:19 41:8 60:17
 70:19,20 81:8 103:9
 111:15 146:13
systems 4:5 18:19 24:5
 37:17,19 41:1 46:11
 47:7,10 48:8 73:16
 74:12 77:3 121:5

T

T-O-R-M 104:11
table 3:11 148:5,7,8
 150:10
take 3:17 10:14 13:10
 14:16 19:18 34:14
 51:19 52:1 74:13 90:7
 90:7 95:16 103:14
 112:2 125:3 136:16
 138:5 146:9
taken 5:20 33:3 63:12
 85:5,7,13 95:18 96:3
 118:21
takes 46:6
talented 62:4
talk 34:5 54:14 58:6
 111:21
talked 50:7,21 54:2
 82:22
talking 107:13 121:2
 125:8 130:18
tar 127:12
targeted 70:16
task 65:1 75:7
tasks 88:21 142:17
team 4:12 11:13 19:15
 20:12,13,17 21:1 39:1
 44:7,7 49:18,19 84:19
 88:8,8 94:19 141:11
team's 17:15
technical 24:4 29:1
 42:18 50:18 55:20
 58:18,19 60:15 62:4
 62:14 67:22 81:10
 109:18 123:19 129:2
 145:19 146:1 147:13
technically 113:4
technicians 26:5
technique 30:18
technologies 5:10
 44:12
technology 44:22
 106:17,18
tell 12:21 54:19 96:13
 117:19 119:20 122:4
 138:2
temperature 25:9 33:2
 34:22 35:2 45:22 47:1
 48:1 78:17
temperatures 79:4
temporary 26:12
ten 31:14 67:13 81:21
 94:21 125:1 132:9
 138:7
tension 50:22
term 60:8 97:5
terminate 146:22
terminating 49:5
terms 69:18 72:16,18
 76:4 85:9
Terry 72:13
Tesoro 80:5 115:15
testified 111:11
Texas 20:18 21:7 53:13
 62:20 135:3 147:7
text 31:3
thank 9:22 10:9,11,15
 13:17 19:5,7,9,10,22
 20:1,6 21:12 44:2,4
 48:9,13 49:14,15,17
 63:6,7 64:4,5 71:5,7
 71:11,17 76:6,9,14
 84:17 85:13,14,17,22
 86:2,4,11 90:2,17
 91:11,16 94:6,8 97:11
 97:13,14,22 98:14,16
 98:21 100:12 102:2,4
 102:6 103:17 104:4,8
 104:17 107:17,21
 108:1,21 109:4,6,8
 115:2,4,9 116:12,14
 117:5,13 118:1,11,17
 120:5,7 123:6,8
 125:11,13 126:3,7
 127:15,16,18,22
 128:22 129:2,4 130:3
 130:4,6 132:2,4
 134:11,13 138:17
 139:3 150:6 151:15
thanking 71:12 91:4
thanks 68:14 91:10
 94:3,5 98:13 102:3
 141:10
theirs 75:1
thickness 42:20
thin 29:15,18
thing 19:21 55:3 57:3
 74:22 80:4 89:19
 100:16 101:7 109:16
 113:3 123:4 136:5
things 47:13 48:5 50:14
 51:15 52:4,8,11,13,18
 57:17 58:17 78:6 80:7

80:8 82:7,14 84:4,6
 99:11 107:15 113:4
 114:12 119:2,3 121:1
 121:18 122:12 124:2
 124:10,19 125:2,3
 126:11 130:1 133:2
 134:21 135:17 137:7
think 3:4 19:15,17
 24:18 49:21 50:2 52:5
 53:7 55:2,9 57:7,9
 58:4,5 60:6,16,18
 61:2,13 62:1 71:14,15
 72:9 76:2 84:4 85:5,7
 85:20 86:18 91:12
 92:1 93:4,15 95:1
 99:5,11 100:5,17
 103:4 107:5 109:21
 110:19 118:18 123:18
 124:3 125:7 128:21
 129:19 135:6 136:4
 136:12,20 137:3,12
 139:2 148:16 149:13
 149:22
thinking 58:16 63:2
 94:9 101:17,19
thinned 25:13 26:19
thins 30:14
third 4:12 5:2 11:9
 14:15 21:14 44:10
 92:20 104:20 144:19
thorough 23:6 68:17
 71:18 97:22 108:22
 126:5 130:18
thoroughly 84:5
thoroughness 91:17
thought 53:5
thoughtful 91:19 93:5
threat 131:4
three 11:15 12:12 30:21
 65:19 66:5 68:6 81:18
 81:22 85:11 108:3
 113:22 139:1 140:13
 145:8 146:17
throughput 45:21 48:4
throw 138:5
Thursday 31:6
ticking 114:20
Tillema 20:13
Tim 127:20,22
time 7:11,14 8:6 10:9
 10:12 11:3,21 17:6
 24:20 29:18 30:15
 31:18 47:2,3 68:3
 79:6 85:20 89:17 96:7
 96:19 99:3,7 104:20
 105:15 108:12 110:2
 110:17 114:15,20
 115:1,22 119:1

120:14 121:9,12,16
 122:16 123:15 125:3
 127:15 130:20 131:8
 139:5 143:19 148:22
 149:2,5
timely 33:3 71:2
timer 123:14
times 89:10 135:14
tip 26:17
tireless 141:11
Title 89:13
titled 15:19
TKC 112:8
today 3:9 45:10 67:14
 106:3 112:3 113:14
 113:15 137:10
today's 4:11 5:2 6:18
 100:19
told 136:8
tolerated 33:9
Tom 71:22
tonight 10:20,22 15:3
 18:7 20:7,16 21:2
 94:20 117:16 118:18
 122:14 126:13 151:11
tonight's 16:15
tool 89:21 105:2,3
 107:18
top 107:1 110:6
Torm 104:8,10
Tosco 8:9 45:6,15
 51:12,13 111:19
total 67:10 68:18 70:3
totaling 69:18,19
totally 106:13 150:1
touched 50:4 56:11
tower 25:4,17 27:22
 29:5,7
tower's 25:8
town 119:7
towns 119:21,21
toxic 20:19
toxicity 38:16
track 42:4
trade 123:1
tragedies 8:9
tragic 140:19
train 112:6
training 67:18,22 68:1
 69:7 70:4,13 103:14
 106:18,20,22
transcript 1:22 94:15
 104:9
transition 109:4
transparency 91:18
 149:12
trapped 28:12
trauma 101:22

travel 123:5
treasurer 115:13
treated 127:4 130:14
treatment 4:21 22:20
tremendous 104:19
 107:13
trend 23:14
tried 26:13 44:20 74:13
trigger 48:5
triggered 46:15,16
 47:13
trip 19:11
Trombetta 1:19 2:13
 63:15 64:3,4,10 71:8
 80:1 82:22 86:20 87:5
 87:10
true 55:6 100:10 124:16
 135:1 149:9
truly 5:16
trusted 133:7
try 26:8 107:8,9 118:12
trying 81:3 82:3,12
 103:5 124:6
Tuesday 114:2
turn 16:14 76:3
turnaround 6:14 17:17
 32:6,7 42:9 55:15
 56:14 57:6 59:12
 61:10,12 87:1,16,19
 88:2,7,8,10,13,17,20
 89:4 90:1 135:18
turnarounds 32:5 56:16
 87:8,12,16 89:8,17
 135:16
turning 103:10
turns 135:7
two 4:22 5:1 6:19 13:2,5
 13:5 17:2 19:13 23:2
 26:21 27:4,8 28:9
 33:6 42:22 44:8 52:7
 66:4 68:6,13,19 69:1
 69:17,18 77:1,19 82:5
 83:5 87:22,22 88:4
 113:4 124:2 141:12
 144:18 145:11 146:14
type 16:6 44:14 45:1
 46:2 47:18,20 49:13
 69:19 83:5
types 58:22
typical 30:3
typically 68:9

U

U-A-R-D-O 97:20
US 1:1,9,11,11,12,22
ultimately 4:7 21:4
 29:11 32:10 34:15
 35:8 112:6

unable 24:2 28:6
unacceptable 9:4 49:8
unanimous 140:13
underlined 133:17
underneath 27:3
understand 12:10 18:5
 75:12 86:21 89:12
 110:7,8 134:22 137:7
understanding 18:11
 31:16 97:1 101:16
 124:6 149:4
underway 141:6
unfortunately 8:2 20:17
 98:5 102:15 131:6
Unified 70:5
union 108:8,17 120:20
 132:11 133:13 136:6
 136:7,10
unions 81:11 100:7
 136:12
unique 89:9
unit 17:22 18:1,12
 22:14 24:22 25:21
 26:8,10,19 27:18
 32:16 33:4,7,10 36:5
 38:21 47:14 50:14
 57:22 58:2,12 59:8
 61:20 63:17 64:12
 67:13,16 68:11,15,18
 69:17 70:9 87:15
 101:20 110:9 112:8
Unit's 67:18
United 53:17 115:5,12
 116:15,17 117:2
 125:20 128:7 132:14
 133:22
units 17:12 74:9 95:13
unnecessary 35:18
 144:1
unsafe 52:16 110:21
 112:16
updated 143:12 144:14
 144:15 146:16
updates 22:4 83:12
upgrade 31:20 37:2
 119:4
upgraded 30:19
upgrades 8:21 36:13
upgrading 54:8
uplift 131:10
urge 16:12 146:8 150:3
use 5:9 15:9 24:4 33:13
 77:16 100:18 106:17
useful 19:2 134:21
 135:11
users 36:22 39:22 40:5
 40:8,18 41:2,17
usually 68:11 88:15

USW 108:7,19 118:5
Utah 145:12 147:4
utilizing 51:7

V

V 120:8
valuable 85:21
value 42:20 104:3
valve 25:16
valves 122:17,18
vapor 22:16 27:3,5,5,20
 28:2,10
varied 37:22
various 16:4 37:9 54:15
 60:9
Velasco 72:10
vent 27:22
verbiage 137:8
verification 37:17 40:22
 68:20 69:13
version 146:16 149:13
versus 56:16 57:4
 137:9
Vice 72:2
video 24:19,21
videos 134:20 139:15
view 119:19 140:19
vigilance 103:14 132:1
vigilant 103:15
vision 101:17
vocabulary 119:11
voice 62:21 126:1
voices 62:17 63:4
volume 50:16
voluntarily 10:16
vote 2:20 12:15,16
 14:19 22:9 91:13,14
 139:5 140:3,13 149:3
 150:22
votes 140:13 149:16
voting 149:4
vulnerable 130:21

W

W-A-L-C-E-K 130:10
wait 150:4
waiting 144:17
wake 57:18
Walcek 130:8,9,9 132:4
wall 28:18 29:14 30:10
walls 25:12 29:17
want 9:22 14:16 62:8
 71:17 72:17 76:6
 80:16 85:11 86:6
 91:16 93:15 97:21
 99:16 100:11,16
 102:9 104:17 106:7
 107:3,20 113:3

123:21 124:2,12
 126:7 127:15 138:3
 138:13,15 149:20
wanted 72:8 108:16
 109:17 118:5 119:3
 123:21 125:22 129:1
 129:1 131:15
warranted 25:21
Washington 135:4
wasn't 18:12 19:12 56:1
 72:12 82:14 123:11
 123:17
watch 16:12
water 21:9 27:11,14
way 25:17 28:7 32:22
 34:17 38:22 49:21
 52:5 107:1 111:19
 124:10 134:9 140:16
 149:3
ways 14:2 64:15 110:7
we'll 12:3 63:8 79:11
 90:12 139:5
we're 11:4,7 45:9 61:2
 79:6 80:22 82:3,5,12
 83:3 84:11,15,22 96:6
 97:17 99:1 103:14
 105:20,20 124:20
 130:20 134:9 136:21
 138:6,18,18 148:16
we've 60:1 74:13 78:5
 79:3,17 80:4 83:2
 84:4 93:9 105:11
 109:21 110:4 116:19
 137:5 138:13
wearing 121:2
wears 121:5
website 5:5 31:6
WEDNESDAY 1:7
week 84:14 88:17,19
 93:8
weeks 67:21 68:13
 106:5 148:15
welcome 2:3 3:5 90:20
went 17:7 57:9 90:10
 112:15,18 114:17
 119:7 120:20,21
 122:5,20,21 130:19
 151:18
Wesley 94:12,12
West 7:22 130:20
Western 1:16 2:8 11:8
 20:7
White 116:15,15,16,17
 118:3,4
Whitmore 7:15,18,19
 7:21 10:12
Wiber 118:13
wide 9:20 53:9 92:11

96:1 127:14
willing 116:7
willingness 117:21
win 137:11
winding 92:19
Wingard 20:15
wish 119:18
witnesses 28:17
won 112:21
wonderful 137:20
 138:14
wondering 56:19,21
 62:5 119:15
Woods 147:4
word 138:11
wording 39:5
work 10:13,14 33:14,20
 45:10 48:20 51:7,8,15
 51:16,19,22 54:15
 60:9 71:19 72:8,15
 73:1,6,9 74:21 76:7
 79:21 80:18 86:8
 89:11 94:3,18 97:2,22
 98:13 99:2 102:21
 103:7,18 104:19,19
 106:9 108:8 109:20
 110:21 112:16 115:10
 115:17,20 116:5,12
 116:18,21 117:20
 119:20 120:4,4
 128:10,21 129:2,18
 130:12 133:4,10
 135:11,19 136:11,19
 137:6 138:12 141:11
 149:19
worked 61:11 72:9
 76:16 77:17 80:1,6
 94:19,22 103:10
 117:6 136:7 142:14
worker 8:20 64:16
 108:11 132:19 133:12
 136:4 137:5
worker's 99:19 100:18
 102:20
workers 4:17 9:12,16
 10:15 19:4 26:20
 28:18 49:7 51:18 52:2
 65:12 99:14 100:7,13
 100:14,20 102:18
 106:9,10 107:1 108:6
 108:9,11 109:13
 110:21 111:19 112:13
 112:15 115:5,12,14
 116:2,15,17 117:3,15
 118:9 128:7,8,13
 130:2 131:12 132:2
 132:11,12,14,18
 133:5,11,12,20,22

134:6,10 135:14
 136:1 138:2
workforce 9:20,22
 43:13
working 27:2 64:15,19
 66:13 70:11,15 73:5
 75:6 77:18 79:17
 81:11 82:5 85:9 100:2
 108:14,17,20 118:8
 122:20 142:9
world 15:9 16:5 100:19
 108:6 110:1 126:10
 127:14 136:17 137:10
worried 27:14 33:6
 35:8
worst 38:16
wouldn't 95:7 119:9
wow 96:4
write 119:5
writing 98:3 110:16
written 14:19 38:2
 88:11,14 95:5
wrong 122:14 130:19
wrote 50:18 111:11

X

Y

yards 17:12
year 16:3 30:15 31:14
 66:16 67:9 68:7 69:16
 73:4 80:5 87:14,17
 91:4 109:20,20
 120:20 132:10 135:22
 136:1
years 21:10 25:12
 48:16 73:17 81:18
 95:8 101:9 105:5,12
 105:12 122:5 125:1
 134:19 138:7,7
 141:12 142:1 144:9
 144:18 149:9,18
yelling 105:5
yellow 12:5 90:18
young 103:15

Z

zinc 145:14 147:10,14
zone 35:17 59:19

0

1

1 81:19,20,21
1,530 68:21
1,605 69:18
10's 129:5
10,800 29:6

100 31:20 32:8 37:1
 54:7 107:12,14 135:9
100's 129:6
12 59:9 81:19 147:2
125 107:12
13 2:4 126:14,18
130 35:1
1300 87:8,11
13650 14:6
139 2:20
14 25:5
148 2:22
15 30:15 67:21 87:14,18
 87:19 94:21 131:7
15,000 4:20 9:2 22:18
 100:14 130:15
15th 87:13
160 70:4
19 2:4 22:15 28:3
 100:13 147:5
1945 122:7
1975 105:6
1980's 114:8,9
1999 45:7 51:13 52:5
 111:18

2

2-1 151:12
20 65:10 100:13,14
 134:19
20's 129:6
2000 143:3
2001 40:4,19 41:11,19
 60:3 120:17
2002 143:3
2007 32:4
2008 33:16 52:9,15
2009 145:9,12,14 147:2
 147:2,5
2010 32:15 33:1,16 52:9
 52:15 132:15 145:9
 145:14 147:9
2011 17:16 32:5 59:12
2012 4:13,22 8:15 11:16
 14:15 16:18 22:11
 24:22 32:4,12 53:3
 64:9,14 67:14 91:19
 106:4 130:16 139:12
 147:8
2012031CA 139:10
2013 16:21 23:4 29:2
 67:4 68:2
2014 5:13 14:20 16:10
 23:13 64:20 65:9
 68:13 69:16 70:3 73:9
 81:19
2015 1:7 70:10 81:20
 87:18 138:11 139:16

2015-01 143:22 146:12
2016 67:2 81:22 87:20
21 2:8
22 144:14 146:15 147:9
 149:14
23 39:11
24 39:18
25 40:12 48:16 60:6
 81:17 95:8
26 40:21
27 41:6 67:14
28 1:7 40:3 41:20
 139:16
29 41:15

3

3 2:3
3:50 25:1
30 42:2 88:12
300 17:12
306 69:1
31 42:7
32 42:16
39 105:12

4

4 25:12 30:9 147:2
4-sidecut 22:13 25:8
 29:3,13,22 31:19,21
 34:10
4,500 132:14
40 105:5,12 121:22
 146:19
40-1-1 121:22
45 121:16
450 78:18
460 28:14

5

5 14:20 108:7,19 115:12
 116:17 117:3 118:9
 128:8 134:18 147:8
50 142:1 144:9
500 35:2
52 29:14 32:2
54 89:6
570 37:12 40:13
571 37:14 39:18
574 37:16 41:7
578 37:17 40:22

6

6 22:11 24:22 32:3,12
 64:8,13 106:4 139:12
6:30 3:2 28:9
600 68:1
64 2:13
640 25:9 29:4

678 47:9
6th 32:14,19

7

7 15:17
71 2:14
750 45:17
76 2:15

8

8 89:13
80 68:12
80's 120:14 122:19
802 69:2
88 121:19 122:21

9

C E R T I F I C A T E

MATTER: Chevron Richmond Refinery File

DATE: 01-28-15

I hereby certify that the attached transcription of pages 1 to 173 inclusive are to the best of my belief and ability a true, accurate, and complete record of the above referenced proceedings as contained on the provided audio recording.

Neal R Gross

NEAL R. GROSS

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701