

BEFORE THE SOUTH DAKOTA PUBLIC UTILITIES COMMISSION

DOCKET NO. HP22-002

**IN THE MATTER OF THE APPLICATION OF
NAVIGATOR HEARTLAND GREENWAY, LLC
FOR A PERMIT TO CONSTRUCT THE
HEARTLAND GREENWAY PIPELINE**

**Direct Testimony of William R. Byrd, P.E.
On Behalf of the Staff of the South Dakota Public Utilities Commission
May 25, 2023**



1 **Q: Please state your name and business address.**
2
3 A: William Randall Byrd
4 801 Louisiana St., Suite 200, Houston, Texas 77002
5
6 **Q: Describe your educational background.**
7
8 A: I hold Bachelors and Masters degrees in Mechanical Engineering from the Georgia
9 Institute of Technology.
10
11 **Q: By whom are you now employed?**
12
13 A: I am President of RCP Inc, a professional engineering and regulatory consulting firm
14 which offers consulting services to PHMSA-regulated pipeline companies, investors,
15 legal firms, and governmental agencies on a wide variety of pipeline issues.
16
17 **Q: What work experience have you had that is relevant to your involvement on this
18 project?**
19
20 A: I have over 40 years of experience in the oil, gas, and pipeline industry in positions
21 ranging from engineer, engineering supervisor, gas coordination manager, regulatory
22 compliance manager, pipeline company area manager, and consultant. My experience
23 includes design, construction, operations, maintenance, corrosion control, emergency
24 response, and risk management. I routinely teach both public and private courses on
25 pipeline operations, risk management, and regulatory compliance, including classes
26 funded by PHMSA for government officials and select members of the public. I am very
27 familiar with the requirements of 49 CFR Parts 190 through 199, including Part 195 -
28 Transportation of Hazardous Liquids by Pipeline which is applicable to pipelines
29 carrying supercritical CO₂, like the subject pipeline.
30
31 My experience is explained further in my CV and attached to my testimony as
32 Exhibit_WB-1.
33
34 **Q: What Professional Credentials do you hold?**
35
36 A: I am a Licensed Professional Engineer in the States of Texas (license number 94036);
37 Louisiana (license number 24058); Mississippi (license number 10881); and Alabama
38 (license number 18066). I am also a Professional Member of the Association for
39 Materials Protection and Performance (previously known as NACE).
40
41 **Q: What is the purpose of your testimony?**
42
43 A: My testimony is to state my opinions developed from my review of relevant portions of
44 the application filed by Navigator Heartland Greenway, LLC (Applicant) for a permit to
45 construct the Heartland Greenway Pipeline (subject pipeline) together with related
46 Docket filings.

1
2 I was requested to develop opinions as to whether or not the proposed facilities will meet
3 the design, construction, testing, operation and other requirements of Federal Pipeline
4 Safety Regulations (49 CFR 195 – all subparts) and other applicable federal and state
5 regulations, including:

- 6 a. Compliance with Federal Integrity Management Plan requirements;
7 b. The adequacy of proposed pipeline design in Unusually Sensitive Areas (USAs) and
8 High Consequence Areas (HCAs);
9 c. The proper location and number of valves and pumping stations; and
10 d. Determining whether the proposed project will pose a safety risk, particularly for
11 leakage, above acceptable industry standards for carbon dioxide pipelines.
12

13 I have also been requested to determine, within my areas of expertise, whether the Project
14 meets the criteria set forth in SDCL 49-41B-22, as follows:

- 15 a. Project will not pose a threat of serious injury to the environment nor to the social and
16 economic condition of inhabitants or expected inhabitants in the siting area;
17 b. Project will not substantially impair the health, safety, or welfare of the inhabitants in
18 the siting area;
19 c. Project will comply with applicable laws and rules as provided by the Commission for
20 my review¹; and
21 d. Project will not unduly interfere with the orderly development of the region with due
22 consideration being given the views of governing bodies of affected local units of
23 government.
24

25 **Q: What methodology did you employ?**

26
27 A: My methodology included a review of the permit application and exhibits for the
28 Navigator Heartland Greenway Pipeline System per SDCL 49-41B, testimony from
29 others, responses to PUC Data Requests (DR), and other documents included in Docket
30 No HP 22-002, including some materials which were provided to PUC Staff in responses
31 to data requests but are confidential and not publicly available. I compared these
32 documents to current PHMSA regulations and relevant industry standards and practices,
33 as well as my own knowledge and experience.
34

35 **Q: On whose behalf was this testimony prepared?**

36
37 A: This testimony was prepared on behalf of the Staff of the South Dakota Public Utilities
38 Commission.
39

40 **Q: Is the subject pipeline considered an interstate pipeline?**

41
42 A: Yes, the proposed Heartland Greenway Pipeline is considered to be an inter-state pipeline
43 by PHMSA, because it transports CO2 between states and across state boundaries.
44

¹ I am not an attorney and will not provide any legal opinions.

1 **Q: What agency has primary regulatory authority for the safety of the subject**
2 **interstate pipeline?**

3
4 A: Interstate pipelines are regulated at the Federal level by the US Department of
5 Transportation (DOT), and not by the individual states the pipeline operates in. The
6 Pipelines and Hazardous Materials Administration (PHMSA) is the agency within DOT
7 that enforces the Pipeline Safety Regulations. These regulations are contained in the
8 Code of Federal Regulations (CFR) Title 49 Subchapter D – Pipeline Safety, Parts 190
9 through 199.

10
11 **Q: Is the subject pipeline considered a Hazardous Liquids Pipeline?**

12
13 A: Yes, the proposed Heartland Greenway Pipeline is considered to be a Hazardous Liquids
14 pipeline regulated under 49 CFR Part 195-Transportation of Hazardous Liquids by
15 Pipeline.

16
17 **Q: What is the PHMSA permitting approval process for a hazardous liquid pipeline?**

18
19 A: PHMSA requires advance notification of large pipeline construction projects, such as the
20 subject pipeline, which provides PHMSA the opportunity to review and audit the early
21 stages of pipeline design and construction. PHMSA regulations do not generally require
22 an operator to apply for a permit or get approval from PHMSA for the construction or
23 operation of a hazardous liquids pipeline.

24
25 **Q: What documents does PHMSA require from the Applicant?**

26
27 A: PHMSA requires the pipeline operator to develop and maintain an extensive set of plans
28 and documents for the life of the pipeline. An operator is required to document, in detail,
29 how they will meet PHMSA’s regulatory requirements – and then they must follow their
30 own plans and procedures. An operator’s non-compliance with its own procedures and
31 plans is treated as non-compliance with the rule that required those procedures and plans.

32
33 Specific plans and programs required by PHMSA include:

- 34
35
- 36 • Comprehensive construction specifications and standards
 - 37 • Geospatial and other pipeline data filed with the National Pipeline Mapping
38 System (NPMS)
 - 39 • Comprehensive Operating and Maintenance Procedures including Corrosion
40 Control Procedures and Emergency Response Procedures
 - 41 • Operator Qualification Program
 - 42 • Damage Prevention Program
 - 43 • Continuing Public Education Program
 - 44 • Control Room Management Program
 - 45 • Drug and Alcohol Program
 - 46 • Integrity Management Program

- 1 **Q: Does the subject pipeline require an Oil Spill Response Plan?**
2
- 3 A: The subject pipeline does not contain “oil” and is not required to prepare an Oil Spill
4 Response Plan under 49 CFR Part 194. It does, however, require emergency response
5 procedures under 49 CFR Part 195.
6
- 7 **Q: Where is the subject pipeline in the document development process?**
8
- 9 A: The Operator states that they are in the process of developing the required plans and
10 procedures required by PHMSA, which will be in place and vetted prior to operations.
11 These documents will typically evolve and be finalized as various details of the project
12 are finalized.
13
- 14 **Q: What documents produced by the Operator must be approved by PHMSA?**
15
- 16 A: While some special activities require advance notice to and perhaps approval from
17 PHMSA, most plans, programs and procedures are not approved in advance by PHMSA.
18 However, PHMSA conducts routine and comprehensive inspections of these documents
19 for adequacy during compliance audits. PHMSA notes deficiencies in the required plans,
20 programs, and procedures, and requires the Operator to address such deficiencies through
21 Notices of Amendment (NOA).
22
- 23 **Q: Are there parts of the operator’s siting permit application that PHMSA does not
24 review?**
25
- 26 A: The operator’s application to the PUC is designed to satisfy the PUC’s requirements and
27 may include information that is unrelated to PHMSA’s pipeline safety regulations. For
28 example, documentation of a public need for a pipeline is unrelated to pipeline safety and
29 would be outside of PHMSA’s purview. Likewise, an application to the PUC may not
30 contain all the documentation that PHMSA will require. PHMSA reviews documents
31 that are relevant to its regulations – whether they are contained in the application to the
32 PUC or not.
33
- 34 **Q: What inspections are required during construction of the pipeline?**
35
- 36 A: PHMSA requires construction inspection by personnel trained and qualified in the phase
37 of construction to be inspected, to ensure that the installation of pipe or pipeline systems
38 is in accordance with 49 CFR Part 195 and the construction specifications and standards
39 developed by the operator.
40
- 41 While PHMSA does not currently require it, I recommend that the PUC require the
42 Applicant to use inspectors with API 1169 certification. This certification program was
43 developed by the pipeline industry for large pipeline construction projects and is
44 appropriate for inspectors on this project.
45
- 46 **Q: What is PHMSA’s inspection role during construction of the pipeline?**

1
2 A: PHMSA conducts construction inspections to verify that activities in the field comply
3 with the construction requirements of Part 195 and follow the operator's written
4 construction specifications and standards. Field visits will typically focus on areas where
5 PHMSA has encountered problems with other pipeline construction in the past, such as
6 the proper execution of welding procedures, pipe handling, pipeline coating, lowering in
7 and tie-ins.

8
9 PHMSA typically schedules its inspections in advance and coordinates with the operator
10 to ensure the appropriate people and documentation will be made available, or that
11 certain types of activities will be occurring during the inspection. The operator will be
12 notified of the types of documentation and phases of construction that PHMSA wishes to
13 inspect and when it plans to do so.

14
15 While PHMSA's inspections and audits are frequently comprehensive, PHMSA does not
16 serve as the operator's construction inspectors.

17
18 **Q: What is PHMSA's inspection role after construction?**

19
20 A: After the pipeline has been placed into service, PHMSA conducts routine inspections to
21 ensure that the operator is operating the pipeline in accordance with the operator's own
22 procedures, plans and programs, and in compliance with regulatory requirements. These
23 include operating, maintenance and corrosion control procedures and integrity
24 management activities. A basic inspection will focus on verification that tests,
25 inspections, patrols, surveys and other routine actions are being performed within the
26 stipulated time frames and in accordance with the operator's procedures, and ensuring
27 that the individuals performing such tasks are qualified and subject to a compliant drug
28 and alcohol program in accordance with Part 199. Other specialized inspections are
29 conducted to examine, in detail, such things as an operator's integrity management and
30 control room management programs.

31
32 **Q: What is PHMSA's role in decommissioning the pipeline?**

33
34 A: PHMSA requires operators to comply with its regulations until a pipeline is officially
35 abandoned. Abandoned pipelines must be purged of products and isolated but do not
36 necessarily have to be removed. PHMSA does require that the operator file a report of
37 the abandonment with the NPMS.

38
39 **Q: Does PHMSA have authority to grant special permits that waive compliance with
40 one or more of the Federal pipeline safety regulations under Part 195?**

41
42 A: PHMSA can grant special permits that allow alternative means of compliance with its
43 regulations. The terms of these special permits are agreed to in writing and require
44 approval from PHMSA on a case-by-case basis. Such special permits include additional
45 requirements for testing and other restrictions and conditions to ensure an equivalent
46 level of safety as the original requirement, and often include an expiration date.

1
2 **Q: Has the subject pipeline requested a special permit as described above?**

3
4 A: No, the subject pipeline has not requested a Special Permit to my knowledge.

5
6 **Q: What are HCAs?**

7
8 A: In the pipeline safety regulations, HCAs are High Consequence Areas. For hazardous
9 liquid pipelines, these are defined as

- 10 1. A commercially navigable waterway.
11 2. A high population area, which means an urbanized area delineated by the Census
12 Bureau as having a population of 50,000 or more people or a population density
13 of 1000 people per square mile.
14 3. Other populated area with a concentrated population such as an unincorporated
15 town or designated commercial area.
16 4. An unusually sensitive area (USA), defined as a drinking water or ecological
17 resource area that is unusually sensitive to environmental damage from a
18 hazardous liquids pipeline such as a community water intake, a source water
19 protection area for aquifers, a wellhead protection area, an ecological resource, a
20 migratory bird concentration area, an area containing endangered or imperiled
21 species, as defined in Part 195 section 195.6.
22

23 **Q: What is the relevance of HCAs to pipelines?**

24
25 A: PHMSA imposes special “integrity management” requirements on sections of pipelines
26 that “could affect” an HCA with a “Worst Case Discharge” (WCD). Per 49 CFR 195.452
27 *Pipeline integrity management in high consequence areas:*

28
29 *(a) Which pipelines are covered by this section?*
30 *This section applies to each hazardous liquid pipeline and carbon dioxide*
31 *pipeline that could affect a high consequence area, including any pipeline located*
32 *in a high consequence area unless the operator effectively demonstrates by risk*
33 *assessment that the pipeline could not affect the area. (Appendix C of this part*
34 *provides guidance on determining if a pipeline could affect a high consequence*
35 *area.)*
36

37 PHMSA’s integrity management regulations require detailed threat and risk analysis of
38 the affected pipeline segments, extensive inspections to look for defects, and deadlines to
39 address these defects.
40

41 **Q: Could the subject pipeline affect any HCAs in South Dakota?**

42
43 A: Inhalation is the main threat from CO₂. CO₂ in sufficient concentrations can be toxic
44 and displace oxygen, causing illness or death. A CO₂ release is short-lived (measured in
45 minutes, not days), and once released it is at atmospheric pressure. A CO₂ release is
46 unlikely to have a significant impact on drinking water or navigable waters.

1
2 Routing of the subject pipeline has been designed to avoid populated areas, which are the
3 most relevant type of HCA for a CO2 pipeline. A large release of CO2 could travel some
4 distance from the release site, primarily downhill and downwind. My initial review of
5 the pipeline route and terrain maps indicate that there could be some “populated areas”
6 that could be reached by a WCD of CO2, but site-specific dispersion and overland flow
7 modeling is required to estimate which segments of the subject pipeline “could affect” an
8 HCA. To my knowledge this type of modeling has not been conducted as of the time of
9 my review.

10
11 **Q: The Commission received public comment regarding concerns from inhabitants**
12 **within the project area about pipeline rupture and distance that carbon dioxide may**
13 **adversely impact individuals and livestock. Would site-specific dispersion and**
14 **overland flow modeling help the Commission understand whether or not the subject**
15 **pipeline will substantially impair the health, safety or welfare of the inhabitants?**

16
17 A: Site-specific dispersion and overland flow modeling is part of a pipeline’s integrity
18 management program, to determine pipeline segments requiring a higher level of
19 integrity management / accident prevention / accident mitigation. The net effect is to
20 minimize or avoid any exceptional risk to the potentially affected areas from these
21 pipeline segments. Thus, the Commission does not need to delay its approval pending
22 site-specific dispersion and overland flow modeling, because “the health, safety or
23 welfare of the inhabitants” should be adequately addressed by the PHMSA-mandated
24 pipeline integrity management program.

25
26 **Q: In your opinion, should site-specific dispersion and overland flow modeling for the**
27 **subject pipeline be used to inform route selection and siting at the state level?**

28
29 A: Site-specific modeling is expensive and time consuming and can’t be performed until a
30 site is selected. Applicant has used generalized assumptions concerning a significant
31 CO2 release as part of its routing process. This is essentially a screening process and is
32 normal and appropriate when determining a pipeline route. Once the route is determined,
33 based on a variety of considerations, site-specific modeling can be performed for pipeline
34 segments in proximity to important or vulnerable areas. The purpose of this modeling is
35 to inform risk management decisions such as higher integrity pipe or enhanced
36 emergency response. It is not normally used to determine a pipeline’s route.

37
38 **Q: Are main line block valves planned to be installed at the proper locations?**

39
40 A: PHMSA issued a new valve spacing rule on April 8, 2022 (Amdt. No. 195-105, 87 FR
41 20987). At 49 CFR 195.260 Valves: Location, paragraph (c), it requires that “newly
42 constructed or entirely replaced onshore hazardous liquid or carbon dioxide pipeline
43 segments”:

44
45 *...valve spacing must not exceed 15 miles for pipeline segments that could affect*
46 *or are in HCAs, as defined in § 195.450, and 20 miles for pipeline segments that*

1 *could not affect HCAs. Valves on pipeline segments that are located in HCAs or*
2 *which could affect HCAs must be installed at locations as determined by the*
3 *operator's process for identifying preventive and mitigative measures established*
4 *pursuant to § 195.452(i) and by using the selection process in section I.B of*
5 *appendix C of part 195, but with a maximum distance that does not exceed 7 1/2*
6 *miles from the endpoints of the HCA segment or the segment that could affect an*
7 *HCA.*

8
9 In Exhibit D of the application, concerning “Part 195 Exceedance Summary”, the subject
10 pipeline valve spacing will meet the requirements for highly volatile liquid pipelines
11 (HVL) described in paragraph (g) of 49 CFR 195.260 – which requires many more valves
12 than for non-HVL pipelines. Although CO2 is certainly “highly volatile”, I do not
13 believe paragraph (g) in 195.260 would apply to this pipeline, since paragraph (c) of
14 195.260 specifically cites carbon dioxide pipelines – which should take priority over a
15 subsequent paragraph that applied to HVL pipelines in general.

16
17 Valves may assist with some types of maintenance and emergency response, but valves
18 themselves are subject to leakage and failure. The cost of additional valves must be
19 weighed against their potential not only to solve problems but to cause them. In my
20 professional judgment, other forms of risk management are more cost-effective than extra
21 automated valves in most locations. I believe that valve spacing per 195.260 (c) would be
22 appropriate for this pipeline, not 195.260 (g). In either case, the tentative valve spacing
23 seems to be more than adequate. A detailed HCA analysis, which depends upon site-
24 specific dispersion / overland flow analysis, would be required to verify that every valve
25 location is appropriate.

26
27 **Q: Does Part 195 require that the pipeline be protected from external and internal**
28 **corrosion?**

29
30 A: Yes, it does. The application, page 12, states that internal corrosion will be prevented by
31 requiring captured CO2 to meet strict specifications that are continuously tested for at the
32 capture facilities prior to entering the pipeline system. Exhibit D to the application states
33 that the external corrosion control cathodic protection system will be activated in stages
34 as the pipeline is constructed, which exceeds the regulatory requirements and should
35 minimize the potential for external corrosion.

36
37 **Q: What provisions will be made for detecting leaks on the pipeline?**

38
39 A: Per the application, page 11:

40
41 *Applicant will develop and install a comprehensive leak detection system that consists of*
42 *both non-continuous and continuous monitoring. The non-continuous components of the*
43 *leak detection system will consist of aerial patrol (minimum 2 times per month) and in-*
44 *line inspection tool pigging operations to check for corrosion (initial baseline at*
45 *installation and subsequently at 3 to 5-year inspection intervals). The continuous*
46 *components of the leak detection system include compensated mass balance, real time*

1 *transient model, negative pressure wave, fiber optic sensing cables, and strategically*
2 *placed CO2 monitoring devices.*

3
4 The continuous monitoring systems will exceed the regulatory requirements and should
5 provide state-of-the-art leak detection capabilities.
6

7 **Q: Will the contents of the pipeline be odorized?**

8
9 A: PHMSA does not require odorization of CO2 pipelines, and such odorants may not be
10 technically feasible for the subject pipeline. Applicant has not committed to odorization.
11 In my opinion, odorants are helpful in natural gas distribution pipelines because they
12 assist with detection of small leaks inside homes, but they are not applicable and should
13 not be required for CO2 transmission pipelines. It should be noted that PHMSA does not
14 require natural gas transmission pipelines to be odorized in most situations, even though
15 the gas they carry must be odorized once it enters a gas distribution system.
16

17 **Q: What are PHMSA's emergency response requirements?**

18
19 A: PHMSA requires that a pipeline operator develop comprehensive emergency response
20 plans, train their personnel on those plans, coordinate and drill those plans with local
21 officials, have personnel, equipment, instruments, tools and materials as needed to
22 respond to emergencies, and provide immediate and direct notification to public safety
23 agencies in the event of an emergency.
24

25 **Q: Does PHMSA require the operator consult with state agencies, such as the**
26 **Department of Public Safety, on the development and review of emergency response**
27 **plans?**

28
29 A: PHMSA's regulation require that a pipeline operator communicate with emergency
30 officials and local public officials, by incorporating API RP 1162 as part of the federal
31 pipeline safety regulations:
32

33 *§195.440 Public awareness.*

34 *(a) Each pipeline operator must develop and implement a written continuing*
35 *public education program that follows the guidance provided in the American*
36 *Petroleum Institute's (API) Recommended Practice (RP) 1162 (incorporated by*
37 *reference, see § 195.3).*
38

39 PHMSA's regulations require, in §195.440 (d) (4), communication concerning:

40
41 *Steps that should be taken for public safety in the event of a hazardous liquid or*
42 *carbon dioxide pipeline release*
43

44 PHMSA audits a pipeline operator's emergency response plans and requires that relevant
45 information be communicated to public officials, but does not require that local officials
46 or state agencies review or approve those plans.

1
2 **Q: Will the subject pipeline comply with PHMSA’s emergency response requirements?**
3
4 A: The Applicant has committed to develop the necessary emergency response plans and to
5 review and update them more frequently than PHMSA requires.
6
7 **Q: The Commission has heard public comment from first responders with concerns**
8 **about incidents and their ability to respond to those incidents. In order to assess**
9 **whether or not the subject pipeline has emergency response plans in place that**
10 **address those concerns, should the operator provide a copy of the emergency**
11 **response plan to the Commission for review prior to the Commission making its**
12 **determination on the application? Please explain why or why not.**
13
14 A: PHMSA inspects pipeline operator emergency response plans on a routine basis.
15 PHMSA has a “PREPAREDNESS, EMERGENCY SUPPORT, AND SECURITY
16 DIVISION” within the Office of Pipeline Safety at the headquarters level, with a Director
17 and 10 employees as of 4/23/2023 (Exhibit_WB-2). PHMSA’s personnel deal with
18 pipeline issues as a full-time job and develop a high level of expertise. First responders
19 should communicate their concerns to the Applicant and to PHMSA – both of whom
20 have expertise to respond appropriately to those concerns. For these reasons, I believe
21 the Commission should rely on PHMSA’s pipeline-specific emergency response
22 expertise for plan review.
23
24 **Q: Is the subject pipeline following all PHMSA requirements?**
25
26 A: PHMSA requires that plans, procedures, and specifications be developed either prior to
27 the start of construction or the start of operations (as appropriate). The documentation
28 that PHMSA will ultimately require has not been finalized and was not available for my
29 review. I cannot at this time render an opinion concerning the operator’s final plans and
30 procedures, but it appears that thus far, the subject pipeline is aware of and intends to
31 follow all PHMSA requirements.
32
33 **Q: PHMSA is in the process of updating its regulations for carbon dioxide pipelines.**
34 **Do you have knowledge as to what PHMSA may require for carbon dioxide**
35 **pipelines in the rule revision?**
36
37 A: I am aware of concerns raised by the Pipeline Safety Trust concerning CO2 pipeline
38 regulation and it is my understanding that the pending regulations will be responsive to
39 those concerns, but I do not know what those regulations may require.
40
41 **Q: The Commission has heard public comment that the subject pipeline should not be**
42 **issued a permit until PHMSA updates its rules for carbon dioxide pipelines. Do you**
43 **have an opinion as to whether or not the subject pipeline should be delayed until**
44 **PHMSA’s rulemaking is complete?**
45

1 A: CO2 pipelines are already regulated by PHMSA. As mentioned earlier, PHMSA has
2 stated that they intend to amend its regulations specific to CO2 pipelines but the timing
3 and content of those amendments is unknown. This is not unusual. PHMSA maintains a
4 permanent schedule of pending / future regulatory changes. PHMSA's rulemaking
5 process can be lengthy and is in fact never complete because rules are always subject to
6 future amendment. I do not believe the Commission should delay its decision pending a
7 PHMSA rulemaking of unknown content and timing.
8

9 **Q: The operator objected to a number of Public Utility Commission Staff's data**
10 **requests based on PHMSA's role and federal preemption. Are PHMSA's**
11 **requirements considered state mandates, or, do states have the flexibility to**
12 **implement requirements that are more stringent than PHMSA's requirements?**
13

14 A: My understanding as a regulatory expert (but not a lawyer) is that PHMSA, as a federal
15 agency, has sole authority over interstate pipelines and that state and local officials are
16 not allowed to modify PHMSA's requirements for those pipelines.
17

18 **Q: What are your conclusions as of the date of this report?**
19

20 A: Based on the documents reviewed to date, and the claims concerning future activities
21 made by the applicant, the proposed facilities should meet the design, construction,
22 testing, operation and other requirements of Federal Pipeline Safety Regulations (49 CFR
23 195 – all subparts) and other applicable federal and state regulations, should comply with
24 Federal Integrity Management Plan requirements; be appropriately designed in relation to
25 Unusually Sensitive Areas (USAs) and High Consequence Areas (HCAs); have the
26 appropriate location and number of valves and pumping stations; and not pose a safety
27 risk, particularly for leakage, above acceptable industry standards for carbon dioxide
28 pipelines.
29

30 The Project should also meet the criteria set forth in SDCL 49-41B-22, by not posing a
31 threat of serious injury to the environment nor to the social and economic condition of
32 inhabitants or expected inhabitants in the siting area; not substantially impairing the
33 health, safety, or welfare of the inhabitants in the siting area; complying with applicable
34 laws and rules and not unduly interfering with the orderly development of the region.
35

36 **Q. Does this conclude your testimony?**
37

38 A: Yes.
39

W.R. (Bill) Byrd, P.E.
President

Executive Summary

A Summa Cum Laude graduate of the Georgia Institute of Technology, Mr. Byrd enjoys a solid reputation for working with the public, corporate executives, legal representatives, and regulatory agencies to resolve complex regulatory, integrity management, safety, and compliance management issues. He is a professional engineer and regulatory expert, combining exceptional analytical and communication skills with a broad background in engineering, operations, management, economics, and regulatory affairs, yielding excellent professional judgment and problem-solving capabilities that can be applied to corporate-level issues. He conducts multi-day training sessions on pipeline topics several times a year for both public and private audiences. He is a widely respected public speaker and is routinely called upon to make presentations concerning energy pipeline issues to industry associations and other groups at the national and international level including Canada, Brazil, and India. He is the founder and President of RCP Inc., a professional engineering and regulatory consulting firm serving more than 100 global clients throughout the energy pipeline industry.

Accomplishments/Experience

Mr. Byrd's accomplishments and experience include:

- Chairing the 2020 International Pipeline Conference, the largest and most prestigious energy pipeline conference of its type in the world, drawing more than 1,400 delegates and 350+ peer-reviewed technical papers presenting cutting-edge research for all aspects of the energy pipeline industry.
- Serving on the Board of Directors of the Pipeline Research Council International (PRCI) and on its Technology Development Center oversight committee.
- Being selected and serving as a technically competent and independent expert Peer Review Panelist for pipeline safety research funded by PHMSA's Pipeline Safety Research and Development (R&D) Program.
- Chairing the executive committee of the Pipeline Systems Division (PSD) of ASME (American Society of Mechanical Engineers), an engineering society that is recognized worldwide and whose standards are incorporated into regulations by countless federal, state, and local jurisdictions. Current serving as a Senator of PSD.
- Chairing the Safety Engineering and Risk Analysis Division (SERAD) of ASME.
- Chairing tracks on Safety Engineering, Risk Assessment, and Reliability Methods at three International Mechanical Engineering Congress and Exhibitions (IMECE), attended by thousands of engineering and risk management professionals from around the world.

- Serving as the consulting expert to the API / AOPL Pipeline Performance Excellence Team, a permanent team composed of pipeline executives dedicated to improving the safety of the liquid transmission pipeline industry.
- Serving as the consulting expert to the API / AOPL Data Mining Team, a permanent team that analyzes incident root causes and trends in the hazardous liquids pipeline industry and identifies opportunities for further investigation and improvement initiatives.
- Serving on the Interstate Natural Gas Association of America (INGAA) Foundation to identify, prioritize, and fund research projects for the gas transmission industry.
- Serving as a consulting expert during the first criminal prosecution under the Pipeline Safety Act.
- Serving as an expert witness during the first class action lawsuit brought against a pipeline company under the citizen suit provisions of the Pipeline Safety Act.
- Serving as an expert witness / consulting expert on several other pipeline accidents and lawsuits, including those of national significance.
- Chairing the Offshore Corrosion Surveillance Subcommittee for a major pipeline company.
- Facilitating the development and implementation of a corrosion control strategy for oil and gas operations on the North Slope of Alaska, during several congressional investigations.
- Developing solutions for the following: H2S contingency planning in large sour oil and gas production areas, produced water toxicity issues on the Outer Continental Shelf, NORM sampling and testing procedures for oil field wastes, and asbestos exposure issues.

Associations/Affiliations

- American Gas Association
- American Petroleum Institute
- American Society of Mechanical Engineers
- Houston Pipeliners Association
- Association for Materials Protection and Performance (previously NACE)
- Southern Gas Association
- Texas Gas Association

Education

M.S., Mechanical Engineering – Honors, Georgia Institute of Technology, 1982

B.S., Mechanical Engineering – Summa Cum Laude, Georgia Institute of Technology, 1981

Professional Registrations

- Professional Engineer, State of Texas
- Professional Engineer, State of Louisiana
- Professional Engineer, State of Mississippi

- Professional Engineer, State of Alabama
- Professional Member – Association for Materials Protection and Performance

Honors and Awards

- Graduate Fellowship – Georgia Power Research Laboratory
- Pi Tau Sigma
- Tau Beta Pi
- Gamma Beta Phi
- Phi Kappa Phi
- Certificate of Appreciation – U. S. Coast Guard

Presentations and Publications (excluding in-house training sessions)

Byrd, W. R., “PSMS Beginning the Journey: How to get started” presented at the API Webinar on May 21, 2019

Byrd, W. R., “Management Systems and Goldilocks: How Much Process Rigor Is Just Right for Your PSMS?” presented at the AGA Operations Conference in Nashville, TN on April 2, 2019

Byrd, W. R., “Current trends in pipeline industry performance data” presented at the API Pipeline Conference in Phoenix, AZ on April 10, 2019

Byrd, W. R., “Teaching and Engaging with the ‘unpersuadables’ - an experiment – Houston Public Training” presented at the Pipeline Safety Trust Conference in New Orleans, LA on October 18, 2018

Byrd, W. R., “API RP 1173 Evaluation Tool” presented at the Pipeline SMS Evaluation Tool webinar hosted by API on June 26, 2018

Byrd, W. R., “API RP 1173 Implementation Tools” presented at the Pipeline SMS Tools webinar hosted by API on February 27, 2018

Byrd, W. R., “Implementation Tools for API RP 1173” presented at the American Gas Association Pipeline Safety Management Systems workshop in San Diego, CA February 1, 2018

Byrd, W. R., “PSMS Conformance Audit Tool” presented at the API / AOPL Liquid Operators Pipeline Safety Management System Conformance Workshop in Houston, TX June 13, 2017

Byrd, W. R., “Implementation Solutions for Pipeline Safety Management Systems”, presented at the American Gas Association Pipeline Safety Management Systems Workshop in Jacksonville, FL April 12, 2017

Byrd, W. R., “Trends in Incidents, and Food for Thought”, presented at the API / AOPL Pipeline Information Exchange (PIX) meeting in Houston, TX October 11, 2016

Presentations and Publications Cont'd

Byrd, W. R., "Excavation Damage and Near Misses: What Do the Data Tell Us?", presented at the API Damage Prevention Workshop in Houston, TX, May 26, 2016

Byrd, W. R., "Liquid Transmission Data and Strategic Initiatives", presented at the API Pipeline Conference in Carlsbad, CA, April 6, 2016

Byrd, W. R., "Industry Implementation of Pipeline SMS – Industry's Journey", Panel at the API Pipeline Conference in Carlsbad, CA, April 5, 2016

Byrd, W. R., "Pipeline Safety Management System Implementation Tools", presented at the API Pipeline SMS workshop in Houston February 16, 2016 and April 26, 2016

Byrd, W. R., "Cost / Benefit Analysis: A Skeptic's Perspective" presented to the Pipeline Safety Trust annual meeting in New Orleans, LA, November 20, 2015.

Byrd, W. R., "Introduction to API RP 1173: Pipeline Safety Management Systems" presented to the Texas Gas Association in Galveston, TX, June 8, 2015.

Byrd, W. R., Brunt, D.J., "Changes to PHMSA Rules Affect Wide Range of Inspections, Reports" Pipeline & Gas Journal, Vol. No. 242, Number 6, p. 51, June 2015.

Byrd, W. R., Wylie, M.G., "Site-Specific Quantitative Pipeline Risk Analysis Using Monte Carlo Methods" Proceedings of the 2014 10th International Pipeline Conference, Calgary, Alberta, Canada, Paper IPC2014-33171.

Byrd, W. R., "PHMSA Shifts Emphasis Toward Preventing Highest Risk Events" Pipeline & Gas Journal, Vol. No. 241, Number 6, p. 55, June 2014.

Byrd, W. R., "Site Risk Analysis Using Monte Carlo Methods" presented to the Interstate Natural Gas Association of America, Safety Committee; Colorado Springs, CO, May 7, 2014.

Byrd, W. R., Decker, L., "Pipeline Pressure Testing" course for the ASME International Petroleum Technology Institute, Denver, CO, April 14, 2014.

Byrd, W. R., "The problems that come from people focusing too much on Consequences" presented at the Pipeline Safety Trust Conference; New Orleans, LA, November 21, 2013.

Byrd, W. R., "Introduction to Pipeline Regulations in the USA" presented at the Rio Pipeline Conference 2013; Rio de Janeiro, Brazil, September 26, 2013.

Keynote Speaker, "Extreme Value Risk Analysis" ASME Indian Oil and Gas Pipeline Conference 2013, Jaipur, India, February 1, 2013.

Byrd, W. R., Instructor for the Introduction to DOT 192 & 195 Pipeline Regulations, presented at the DOT Pipeline Compliance Workshop, Houston, TX, November 6 – 8, 2012.

Chair, ASME Pipeline Systems Division Awards Ceremony in Calgary, Alberta, Canada, September 25, 2012.

Presentations and Publications Cont'd

Byrd, W. R., "Improving System Integrity for Energy Pipelines in the 21st Century" presented at the Chevron NDE & Pipeline Forum, Houston, TX, March 5, 2012; the NACE Tulsa Section Meeting, Tulsa, OK, April 23, 2012; and the NACE Western Area Conference in Chicago, IL, August 29, 2012.

Byrd, W. R., "Regulatory Developments for Pipeline Recordkeeping" presented at the PODS (Pipeline Open Data Standard) User Conference, Houston, TX, October 12, 2011.

Moderator, "Moving the Industry Forward" panel at the Pipeline Opportunities Conference, Houston, TX, April 19, 2011, with the Executive Director of the Pipeline Safety Trust, the Director of Program Development for PHMSA, the Executive Director of the INGAA Foundation, and the Sr. VP / COO of AGA.

Byrd, W. R., "Common Challenges in Preparing for an Integrated Inspection" presented at the API Pipeline Conference, San Antonio, TX, April 12, 2011.

Byrd, W. R., "Potential Sources of Error in GPS Use for One Call Purposes" Damage Prevention Professional Magazine, p. 26, Vol. 2, No. 2, Spring 2011.

Byrd, W. R., "SPCC and OPA-90 Requirements for Liquid Pipelines" presented at the TGA / PHMSA Liquid Pipeline Workshop, Corpus Christi, TX, June 17, 2010.

Byrd, W. R., "EPA Issues New Spill Prevention Regulations" American Gas Magazine, p.14, May 2010.

Byrd, W. R., "Control Room Management for DOT Pipeline Operators" presented at the MASH Conference, San Antonio, TX, April 28, 2010.

Byrd, W. R., "Oil Spill Prevention Control and Countermeasure (SPCC) Requirements for Gas Pipeline Operators" webinar sponsored by the American Gas Association, March 9, 2010; also presented to the Southern Gas Association; Kansas City, KS, June 10, 2010; also presented to the Texas Gas Association; Corpus Christi, TX, June 15, 2010; also presented at the US DOT / PHMSA regulations workshop; Corpus Christi, TX, June 17, 2010.

Byrd, W. R., "Avoiding Pitfalls Using GPS Data for Damage Prevention" presented at the CGA Excavation Safety Conference & Expo; San Diego, CA, March 4, 2010.

Byrd, W. R., "SPCC Rule Revisions Affect Gas Processing Facilities" Gas Processors Report, Vol. 28 Issue 8, p.1, February 25, 2010.

Byrd, W. R., "DOT Existing Regulations for Leak Detection" presented at the Siemens Technology Conference, Houston, TX, February 23, 2010.

Byrd, W. R., "The New SPCC Rule: Are You In or Out?" The TIPRO Target, Vol. 13. No. 04, p.6, February 19, 2010.

Byrd, W. R., "New Control Room Management Regulations Require Structured Management Approach" Pipeline & Gas Journal, February, 2010.

Presentations and Publications Cont'd

Byrd, W. R., "Offshore Pipeline Construction and Operation" presented to the Select Policy Council on Strategic & Economic Planning of the Florida House of Representatives, Tallahassee, FL, February 4, 2010.

Byrd, W. R., "API, AOPL Working to Standardize GPS System" Oil & Gas Journal, November 9, 2009.

Byrd, W. R., "Methods for Complying with Pipeline Leak Detection and Monitoring Regulations" presented at the Pipeline Leak Detection & Monitoring Conference, Houston, TX, October 28, 2009.

Byrd, W. R., "Pipeline Integrity Management Rules Affecting Gathering, Transmission, and Distribution Pipelines" presented at the GITA Oil & Gas Conference, End to End: Risk and Integrity Management seminar, Houston, TX, September 14, 2009.

Byrd, W. R., "New and Proposed Pipeline Regulations 2-2009" presented at the OQSG User Conference, Houston, TX, February 26, 2009.

Byrd, W. R., Palmer, K., Garrett, J., "One-call System Addresses Offshore Damage Prevention" Oil & Gas Journal, May 4, 2009.

Byrd, W. R., "Best Practices in Damage Prevention for Parallel Construction Projects" presented at the API Pipeline Conference, Fort Worth, TX, April 21, 2009.

Byrd, W. R., Palmer, K., "Company Name Change Requires Diligent Execution" Oil & Gas Journal, March 16, 2009.

Byrd, W. R., "Overview of Shale-Gas Pipeline Development Activities" presented at the Barnett Shale Expo, Fort Worth, TX, March 11, 2009 and the Haynesville Shale Expo, Shreveport, LA, November 21, 2008.

Byrd, W. R., "Best Practices in Damage Prevention for Parallel Construction Projects" presented at the 7th International Pipeline Conference, Calgary, Alberta, Canada, October 1, 2008.

Byrd, W. R., "Risk Factors for Urban Shale Gas Pipeline Development" presented to the Mayor's Shale Gas Development Task Force, Fort Worth, TX, August 7, 2008.

Byrd, W. R., "Damage Prevention Workshop Findings and Recommendations" presented at the API Pipeline Conference, Orlando, FL, April 8, 2008.

Byrd, W. R., "Management Systems and Safety Culture Survey Findings and Recommendations" presented at the Liquid Pipeline Leadership meeting, Squaw Valley, CA, June 25, 2007.

Byrd, W. R., "GIS Applications for DOT Regulatory Compliance" presented at [GeoGathering 2007](#), Estes Park, CO, May 2007.

Byrd, W. R., "Risk Management and Integrity Regulations for Gas and Liquid Pipelines" presented at the GITA Oil & Gas Conference, Houston, TX, September 18, 2006.

Presentations and Publications Cont'd

Byrd, W. R., "Overview of the new Gas Gathering Regulations" presented at the DOT Pipeline Compliance Workshop, Houston, TX, May 10, 2006.

Byrd, W. R., "Introduction to DOT Pipeline Regulations" presented at the DOT Pipeline Compliance Workshop, Houston, TX, February 22, 2006.

Byrd, W. R., "Regulatory Developments for Pipeline Integrity Management" presented at the Geospatial Information Technology Association's 14th Annual GIS for Oil & Gas Conference, JW Marriott Hotel, Houston, TX, September 19, 2005.

Byrd, W. R., "Introduction to DOT Pipeline Regulations; Texas State Pipeline Regulations; Louisiana State Pipeline Regulations" presented at the DOT Pipeline Compliance Workshop, Houston, TX, February 22 – 24, 2005.

Byrd, W. R., McCoy, R.G., Wint, D., "A Success Guide for Pipeline Integrity Management" Pipeline Gas & Journal, November 2004.

Byrd, W. R., Swanstrom, B., "Midstream M&A Transactions: What you don't know about regulatory due-diligence CAN hurt you!" Locke, Liddell, and Sapp LLP presentation for CLE credits, September 23, 2004.

Byrd, W. R., "Associated Regulatory Compliance Issues for Integrity Management" presented at the DOT Pipeline Compliance Workshop, Houston, TX, September 22, 2004.

Byrd, W. R., "Introduction to DOT Pipeline Regulations" presented at the DOT Pipeline Compliance Workshop, Houston, TX, April 6, 2004.

Byrd, W. R., "Current Regulatory Challenges for DOT Pipeline Operators" presented at the 9th annual River City Safety, Health, Security, and Environmental Conference and Exposition, Baton Rouge, LA, August 20, 2003.

Byrd, W. R., "Introduction to DOT Pipeline Regulations" presented at the DOT Pipeline Compliance Workshop, Houston, TX, July 30-31, 2003.

Byrd, W. R., "Learnings from the Olympic Pipeline Incident" in-house training for Portland Pipeline, Portland, ME, April 2, 2003.

Byrd, W. R., "DOT Pipeline Regulatory Developments" presented at the US Oil and Gas Association Conference, Jackson, MS, October 30, 2002.

Byrd, W. R., "DOT Pipeline Training Regulations" presented at the API Training and Development Conference, Galveston, TX, October 25, 2002.

Byrd, W. R., "Introduction to DOT Pipeline Regulations" presented at the DOT Pipeline Compliance Workshop, March 21-22, 2002.

Byrd, W. R., "State Pipeline Regulatory Initiatives" presented at the US Oil and Gas Association annual meeting, Jackson, MS, October 10, 2001.

Presentations and Publications Cont'd

Byrd, W. R., "State Pipeline Regulatory Initiatives" presented at the Southwest Gas Association annual meeting, Phoenix, AZ, August 29, 2001.

Byrd, W. R., "OPA 90 Planning Requirements for US Coast Guard Regulated Facilities" presented at the US Coast Guard compliance workshop; New Orleans, LA, August 16, 2001.

Byrd, W. R., "Operator Qualification Program Requirements / Overview" presented at the Greater Baton Rouge Industrial Managers Association, March 28, 2001, and the Lake Area Industry Alliance, May 8, 2001.

Byrd, W. R., "Pipeline Integrity Management Program Development / Risk Analysis" presented at the Pipeline Integrity Management Workshop, March 6-8, 2001.

Byrd, W. R., "Operator Qualification - Program Management Issues" presented at the DOT Pipeline Operator Qualification Workshop, November 14-15, 2000.

Byrd, W. R., "U.S. Regulatory Scheme for Pipeline Safety" presented to members of the Russian Duma during a state visit, June 22, 2000.

Byrd, W. R., "Operator Qualification Issues and Industry Resources" presented at the DOT Pipeline Compliance Workshop, May 18, 2000.

Byrd, W. R., "New and Proposed Rule Changes for DOT Pipelines" presented at the DOT Pipeline Compliance Workshop, May 17, 2000.

Byrd, W. R., "Introduction to DOT Pipeline Regulations" presented at the DOT Pipeline Compliance Workshop, May 16, 2000.

Byrd, W. R., "Electronic Contingency Plan Team Status, Findings, and Path Forward" presented at the EPA / USCG Region VI Response Team meeting, January 19, 2000.

Byrd, W. R., "Pipeline Legal / Regulatory Requirements for Community Relations" presented at the 1999 API Pipeline Conference, April 21, 1999.

Byrd, W. R., Kasper, S.H., "Proposed USCG Hazmat Spill Planning Rule" presented at the ILTA Southern Region Spring Meeting, April 27, 1999.

Byrd, W. R., "DOT Inspections - Current Expectations" Presented at the DOT Pipeline Compliance Workshops, September, 1998.

Byrd, W. R., "Plan Integration Subcommittee: Objectives and Plans" Presented at the New Orleans Area Committee Meeting, July 30, 1998.

Byrd, W. R., "Relief Settings and Maintenance Activities" Presented at the Coast Guard Compliance Workshops, May, 1998.

Byrd, W. R., "...And Now a Word from Washington" Presented at the Louisiana Pipeliners Association Meeting, September 9, 1997.

Presentations and Publications Cont'd

Byrd, W. R., Brunell, R.A., "'Person in Charge' Training: Current Compliance Issues" presented at the Independent Liquid Terminals Association Conference, June 10, 1997.

Byrd, W. R., "Compliance Guidance for U.S. Department of Transportation Pipeline Regulations" CMA No. 601001F, Chemical Manufacturers Association.

Byrd, W. R., "Training Module for U.S. Department of Transportation Pipeline Regulations" CMA No. 601002F, Chemical Manufacturers Association.

Byrd, W. R., "Natural Resource Damage Assessments: Texas Overview, Louisiana Outlook" presented at SPE Environmental Issues Forum, February 17, 1997 and the ELIRT Regional Training Workshop, November 20-21, 1996.

Hall, S.E., Byrd, W. R., Singh, S., "National Response Team's 'One Plan' Guidance: A Preferable Alternative?" November 1996.

Byrd, W. R., Brunell, R.A., "New Developments in USCG Regulations for Dock Facilities" presented at RCP's U.S. Coast Guard Regulatory Seminar, August 8, 1996.

Byrd, W. R., Shelton, T.C., "DOT Pipelines: Preparing for the Post-Accident Investigation" January 9, 1997.

Byrd, W. R., "Pipeline Risk Management Programs" June 20-21, 1996.

Byrd, W. R., Felder, R.B., "How OPS Regulations Affect the Chemical Industry" presented at Chemical Manufacturers Association Pipeline Compliance Forum, October 24, 1996.

Byrd, W. R., Frey, D., Bertges, W., "DOT Pipeline Spill Planning Requirements" presented at Regulated Pipeline Compliance Seminar, February 29, 1996.

Byrd, W. R., Wheeler, W.H., "Emergency Planning for H₂S Releases: Utilizing Shelter in Place and Interagency Drills" SPE # 25979, presented at SPE/EPA Exploration & Production Environmental Conference, 1993.

Byrd, W. R., South, B.C., Herries, P.E., "Shelter in Place: The Technical Basis for Its Use in Emergency Planning" SPE # 25980, presented at SPE/EPA Exploration & Production Environmental Conference, 1993.



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ACCIDENT INVESTIGATION DIVISION

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*Tim Disher, *Accident Investigator*
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National Response Center
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Legend:
* = Inspector