

Regulatory Overview

49 CFR § Part 192

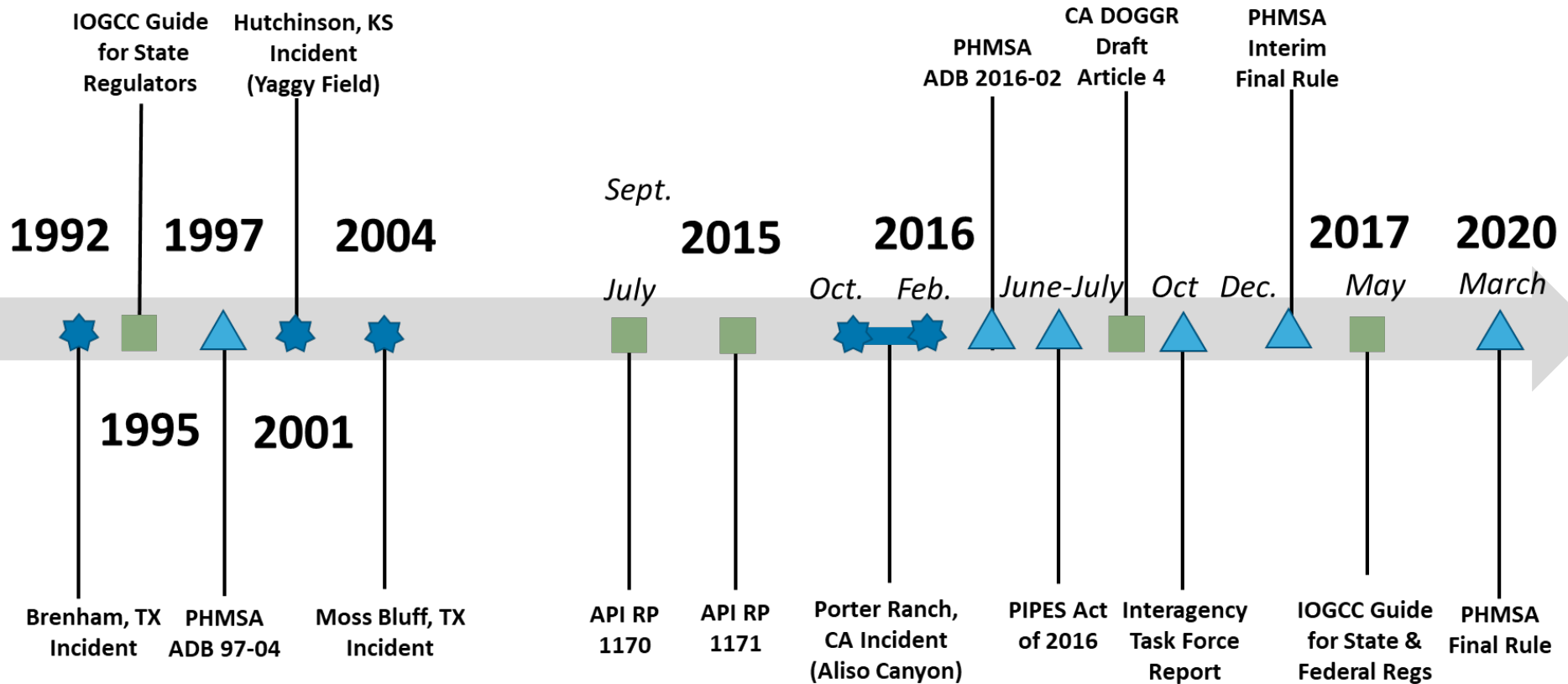


U.S. Department of Transportation
Pipeline and Hazardous Materials
Safety Administration

PHMSA: Your Safety is Our Mission



Timeline to Regulations



Timeline – Incidents

- Brenham Tx: 1992 Release of HVL's from salt dome cavern exploded causing 3 fatalities and 21 injuries
- Hutchinson, KS: 2001 Natural Gas Release resulting in 2 fatalities from the Yaggy UNGS
- Liberty County, TX: 2004 Moss Bluff UNGS – 6 BCF released and burned; no fatalities
- Porter Ranch, CA: 2015-2016 Aliso Canyon – over 5 BCF released. Residents evacuated for extended time



1992: Brenham Incident

Aerial view of the explosion area



Aftermath of the explosion



Source: ABC News

Safety Evaluation of Underground Natural Gas Storage Facilities

21



U.S. Department of Transportation
Pipeline and Hazardous Materials
Safety Administration

PHMSA: Your Safety is Our Mission

- 4 -



2001: Hutchinson Incident



Source: Kansas.com



2004: Moss Bluff Incident



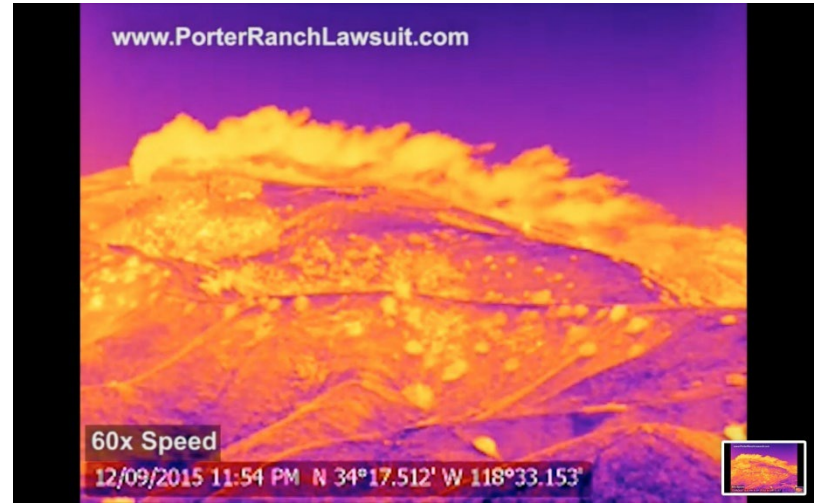
Source: RESPEC



2015-2016: Aliso Canyon Incident



Source: EDF.org



Source: businesswire.com



Source: newsroom.ucla.edu



Task Force Report

Ensuring Safe and Reliable Underground Natural Gas Storage

- Published October 2016
- <https://www.energy.gov/articles/report-ensuring-safe-and-reliable-underground-natural-gas-storage>



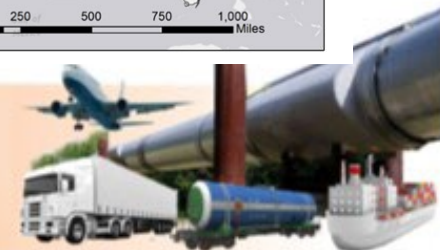
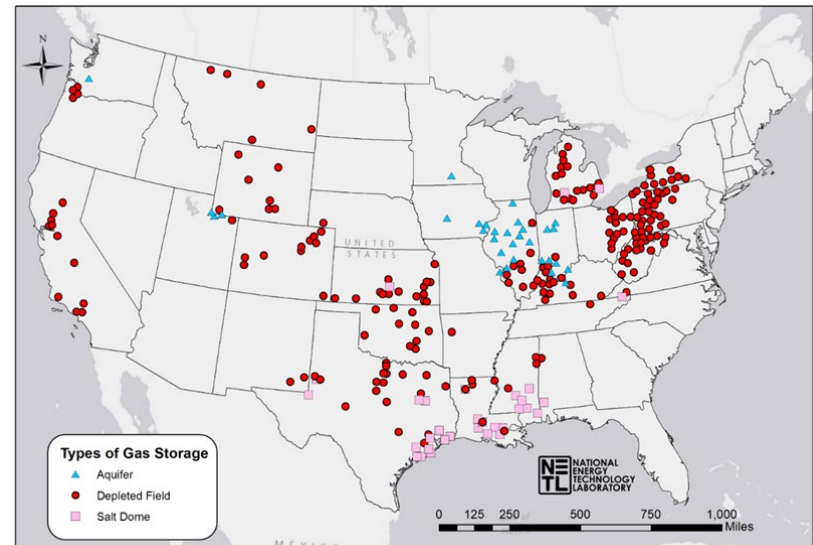
3 Key Areas of Task Force Study

1. **Well Integrity** - Lead: DOE Office of Fossil Energy w/PHMSA
2. **Public Health & Environment** - Lead: EPA Region 9
3. **Energy Reliability** - Lead: DOE Office of Electricity Delivery

Study Input:

- National scope (see map)
- 5 month study
- Multiple workshops, industry and stakeholder engagement

Examining the Nationwide Implications:



Task Force Recommendations

- **Topic I. Field implementation, testing, and monitoring**
 1. Phase out wells with single point of failure designs
 2. Undertake rigorous well integrity evaluation programs
 3. Prioritize tests that quantify well performance:
 - Monitoring, logging, and mechanical integrity are top priorities
 - Integrity tests should have the goal of minimizing total risk
 - Tests should not rely on a single diagnostic.
 4. Deploy continuous monitoring for critical infrastructure



Task Force Recommendations

• Topic II. Risk Management

1. Develop comprehensive Risk Management plans and reviewed (PHMSA – integrity management)
2. Institute more complete and standardized records-management systems
3. Implement risk-management transition plans within one year
4. Account for a broad range of risk factors:
 - Geologic factors
 - Proximity to population centers
 - Weather-related complications
 - Human factors



Task Force Recommendations

- **Topic III. Research and Data Gathering**

1. Conduct a joint DOE-DOT study of subsurface safety valves
2. Conduct a joint study of casing wall thickness assessment tools
3. Industry review of wellbore simulation tools
4. Address data-gathering gaps:
 - Identify locations of unknown wells in UGS facilities
 - Identify proximity of wells to population centers
 - Make data publically available to allow data aggregation

- **Topic IV. Immediate regulatory actions**

PHMSA should consider Incorporating existing industry recommended practices (API RP 1170 and 1171) into applicable regulatory codes, as an interim step



Interim Final Rule/Final Rule

- 49 CFR § 192.12 - Underground natural gas storage facilities.
- API RP 1170 and 1171
 - Caverns
 - Depleted Reservoirs and Aquifers
- [Final Rule - eCFR.gov](http://www.ecfr.gov)



§ Part 192 - Transportation of Natural and Other Gas by Pipeline; Minimum Federal Safety Standards



U.S. Department of Transportation
Pipeline and Hazardous Materials
Safety Administration

PHMSA: Your Safety is Our Mission



49 CFR 192.12 Final Rule

§ 192.12 **Salt Cavern Facilities** constructed....

(a)(1) after 3/13/20: *API RP 1170 & Sec 8 of 1171*

(a)(2) between 7/18/17 and 3/13/20: *API 1170 & Sec 8 of 1171 by 3/13/21*

(a)(3) on or before 7/18/17: *S9-11, API 1170 & S8 API 1171*



49 CFR 192.12 Final Rule

§ 192.12 Depleted Reservoirs & Aquifer Reservoir Facilities constructed....

(b)(1) after 7/18/17: *API 1171*

(b)(2) on or before 7/18/17: *API 1171 Sec 8-11*



49 CFR 192.12 Final Rule

§ 192.12 (c) Procedural manuals **Must**

- Prepare & follow for **each** facility written procedures for conducting OM&EPR activities
- Keep records
- Review & update at least calendar, NTE 15 months



49 CFR 192.12 Final Rule

§ 192.12 (c) Procedural manuals **Must**

- Keep appropriate parts of the manuals accessible at locations where UNGSF work is being performed.
- Have procedures in place before commencing operations or beginning an activity not yet implemented



49 CFR 192.12 Final Rule

§ 192.12 (d) Integrity Management Program

- (1) Elements

- (i) Plan

- (ii) Outline of Procedures to be developed

- (iii) Roles & Responsibilities of UNGSF staff assigned to develop & implement



49 CFR 192.12 Final Rule

§ 192.12 (d) Integrity Mgmt Program Cont'd

- (1) Elements

- (iv) Plan for how Staff will be trained

- (v) Timelines for implementing each program element

- (vi) Plan for how to incorporate information gained from experience into program on continuous basis



49 CFR 192.12 Final Rule

§ 192.12 (d) Integrity Mgmt Program Cont'd

- (2) Baseline Risk-Assessment Intervals

- ***Must complete by:***

- 3/13/24: 100% Reservoirs; 40% Wells

- 3/13/27: 100% Wells



49 CFR 192.12 Final Rule

§ 192.12 (d) Integrity Mgmt Program Cont'd

- (2) Baseline Risk-Assessment
 - May use prior risk assessments as long as it meets Section 8 of 1171
 - When using prior results, **must** account for growth & effects of indicated defects since time of assessment.



49 CFR 192.12 Final Rule

§ 192.12 (d) Integrity Mgmt Program Cont'd

- (3) Re-assessment Intervals
 - Operator must determine appropriate interval for risk assessments (Section 8.7.1 of 1171)
 - How? using results from earlier assessments and updated risk analyses. The re-assessment interval ***must not exceed seven years*** from the date of the baseline assessment.



49 CFR 192.12 Final Rule

§ 192.12 (d) Integrity Mgmt Program Cont'd

- (4) Procedures & Recordkeeping
 - Must establish and follow written procedures for integrity program
 - Must maintain records for the useful life of UNGSF that demonstrate compliance
 - What does this include?



49 CFR 192.12 Final Rule

§ 192.12 (d) Integrity Mgmt Program Cont'd

- (4) Procedures & Recordkeeping
- **Must** include:
 - Records developed and used in support of any:
 - identification, calculation, amendment,
 - modification, justification, deviation, and determination made,
 - and any action taken to implement and evaluate any integrity management program element.



Applicable API RP's

- API RP 1170: Design and Operation of Solution-mined Salt Caverns Used for Natural Gas Storage, *First Edition*, July 2015
- API RP 1171: Functional Integrity of Natural Gas Storage in Depleted Hydrocarbon Reservoirs and Aquifer Reservoirs, *First Edition*, September 2015



API RP 1170/1171 2nd editions

- 1st editions are Incorporated By Reference (IBR)
- 2nd editions published in November, 2022.
- PHMSA reviewing 2nd editions



API RP 1171 Inspection Elements

- Section 8 – Risk Management
- Section 9 – Integrity Demonstration, Verification, and Monitoring Practices
- Section 10 – Site Security and Safety, Site Inspections, and Emergency Preparedness and Response
- Section 11 – Procedures and Training



API RP 1170 Inspection Elements

- Section 8 (from API RP1171) – Risk Management
- Section 9 – Gas Storage Operations
- Section 10 – Cavern Integrity Monitoring
- Section 11 – Cavern Abandonment



ANY
QUESTIONS

