

UNGS Well Work Compliance - Planning, Execution, and Documentation

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Purpose

This presentation will cover the planning, execution, and documentation for UNGS well workovers from a regulatory compliance perspective.



UNGSF (49 CFR 192.3)

Underground Natural Gas Storage Facility (UNGSF) - A gas pipeline facility that stores natural gas underground incidental to the transportation of natural gas, including:

(1)

- A depleted hydrocarbon reservoir;
- An aquifer reservoir; or
- A solution-mined salt cavern.

(2) Injection, withdrawal, monitoring, and observation wells; wellbores and downhole components; wellheads and associated wellhead piping; wing-valve assemblies that isolate the wellhead from connected piping beyond the wing-valve assemblies; and any other equipment, facility, right-of-way, or building used in the underground storage of natural gas.



UNGSF Construction Dates - API RP 1170 and 1171 (1st editions) and 49 CFR 192.12

UNGSF Type	UNGSF Construction Date	Compliance With:			
		API RP 1170 (Salt UNGS)	API RP 1171 (Reservoir UNGS)	49 CFR 192.12(c) (Procedural Manuals)	49 CFR 192.12(d) (Integrity Management Program)
Salt Cavern UNGSF (Domal or Bedded)	After 3/13/20	Yes, all Sections (Prior to commencing operations)	Yes, Section 8 only (Prior to commencing operations)	Yes (Prior to commencing operations)	Yes (Prior to commencing operations)
	Between 7/18/17 and 3/13/20	Yes, all Sections (Prior to commencing operations)	Yes, Section 8 only (By 3/13/21)	Yes (Prior to commencing operations)	Yes (By 3/13/21)
	On or Before 7/18/17	Yes, Sections 9-11 only (By 1/18/18)	Yes, Section 8 only (By 3/13/21)	Yes (By 1/18/18)	Yes (By 3/13/21)
Reservoir UNGSF (Depleted Hydrocarbon or Aquifer Reservoir)	After 7/18/17	N/A	Yes, all Sections (Prior to commencing operations)	Yes (Prior to commencing operations)	Yes (Prior to commencing operations)
	On or Before 7/18/17	N/A	Yes, Sections 8-11 only (By 1/18/18)	Yes (By 1/18/18)	Yes (By 3/13/21)



UNGSF Code Applicability

- It is not just the construction dates that drive the applicability of API RP 1171 and API RP 1170.
- The scope of UNGS activities once in storage operations may trigger Sections of API RP 1171 and 1170 that are not defined as applicable in §192.12 (a) and (b).

See:

PHMSA FAQ# 8 – Replacement, expansion, addition of components/appurtenances on existing storage wells



Maintenance on an Existing UNGSF Well (PHMSA UNGS FAQ #8)

- Per PHMSA’s response to UNGS FAQ (Frequently Asked Questions) #8,
 - “Maintenance activities” are activities that involve “replacement, expansion, or addition of components or appurtenances on existing storage wells.”
 - Such activities “must comply with API RP 1170 or 1171, as applicable.”

<https://www.phmsa.dot.gov/sites/phmsa.dot.gov/files/2022-03/UNGS%20Frequently%20Asked%20Questions.pdf>



Well Workovers

- Maintenance activities performed on an active well
[“*Workover*”, 1170, S. 3.1.67]
- Workover operations may include but are not limited to:
 - Tubing and packer installation/changeout,
 - Running and setting a liner casing string and cementing in place,
 - Well remediation activities (e.g., cement squeeze).



Well Work Performance and Documentation – Key Compliance Challenges/Issues

- Well procedures are vague and/or incomplete
- Personnel Qualifications are missing, vague, or incomplete
- Lack of Operator's process, procedure, and documentation of accepting contractor training/qualifications
- No Management of Change
 - Well work plan deviations (e.g., prior to or as a result of work)
 - Records management and documentation
- Missing and/or incomplete records (e.g., daily reports, tubing/casing MTRs, tubing inspections)



Drug and Alcohol (D&A) (49 CFR 199)

- Per PHMSA's response to UNGS FAQ (Frequently Asked Questions) #11, "UNGSF operators must comply with 49 CFR Part 199"
- A covered employee is a person who performs a covered function,
 - Covered employee = Persons employed by operators, contractors engaged by operators, and persons employed by such contractors.
 - Covered functions include operations, maintenance, or emergency-response functions that are performed on the pipeline facility.
- If your personnel or contract personnel performs a "Covered Function" as part of well workover, they are a "Covered Employee" and are subject to 49 CFR 199 D&A requirements.



Well Work Planning and Execution (Key Steps)

1. Define scope of planned work (UNGS Pgm. Compliant?)
2. Identify/Confirm regulatory notice and reporting requirements
3. Develop and complete well work plan
4. Vendor procurement and scheduling (inc.: personnel qual.)
5. Regulatory notifications per requirements (normal, emerg.)
6. Site preparations (e.g., access, piping, security, HSE)
7. Conduct well work
8. Post Well Work (e.g., regulatory submissions)



Well Work Planning and Execution

- Define Scope of Well Activities
 - Activities identified to be performed varies depending on:
 - Agreed upon Well Integrity Schedule w/ state regulatory agency,
 - Operations and Maintenance data (e.g., abnormal annular pressure readings, prior casing inspection log findings),
 - Baseline assessments required by §192.12(d)(2) (i.e., BL 100% all UNGS wells by 3/13/2027),
 - Reassessment deadlines per §192.12(d)(3) (i.e., ≤ 7-years),
 - Results of risk analysis performed per API RP 1171 Section 8 and §192.12(d) (e.g., corrective actions identified)



Well Work Planning and Execution (cont.)

- Development/Implementation of comprehensive Well Work Program and Procedures
 - Per §192.12(c): “Each operator must have written procedures **in place before commencing operations or beginning an activity not yet implemented.**”
 - Programs and Procedures include an overall workover program, emergency response plans, site safety and environmental plan, wireline/logging procedures, tubing handling and running procedure, MIT procedure, cementing program, etc.
 - Ensure compliance with API RP 1170/1171 and state regulations.

Remember, your UNGS Compliance Program(s) must be compliant as well as your workover program and procedures!



Well Work Planning and Execution (cont.)

- Regulatory Notifications & Permit Acquisition
 - Per 49 CFR 191.22(c), PHMSA must be notified of UNGS maintenance activities that:
 - Involve plugging or abandonment of a well, or
 - Requires a workover rig and costs more than \$200,000 for an individual well (including its wellhead)

Note: Multiple activities within the same storage field may be reported individually or combined into a single notification
 - State Agency (e.g., LDENR, Texas RRC)
 - Provide notices of well work and obtain applicable permits for well work (if applicable).



Well Work Planning and Execution (cont.)

- Vendors/Contractors
 - Procurement – Equipment, Supplies, and Onsite Personnel needed for conducting Well Work.
 - Acquisition and review of qualifications for all vendor personnel to be onsite. This includes:
 - Industry accepted training (e.g., Well Control, First Aid, Forklift, H2S Awareness, CPR)
 - Professional certifications (e.g., Professional Engineer)
 - Formal education,
 - Resume,
 - Contractor letter of qualifications.
 - Up-to-date programs and SOPs (Standard Operating Procedures) relevant to the scope of services to be provided as part of well work.



Well Work Planning and Execution (cont.)

- Prior to commencement of well work activities (Within 1-2 weeks)
 - Review programs and procedures applicable to well work activities (e.g., comprehensive well work programs/procedures, vendor procedures, operator ERP and WCERP) with operator personnel, onsite representative, and vendor personnel.
 - Prepare wellpad(s) for scheduled well activities (e.g., install wellhead cages, remove fencing, wellhead isolation)
 - Make required and/or courtesy notifications to state agency(s) (e.g., BOP tests dates, rig move in dates) via email, phone, and/or agency website.
 - Ensure on-duty controllers are aware of their scope of responsibilities and operational control during well activities.
 - Verify all onsite vendor personnel have provided their qualifications and qualifications are up-to-date and not expired.



Well Control Emergency Response Plan (WCERP)

- WCERP must be specific to the operator.
 - Confirm if state agency requires you to commit to and identify response times as part of the planning process. (California)
- Personnel must be trained/qualified to WCERP.
- Note, need to confirm WCERP is in concert (e.g., Response Levels) with other ERPs (e.g., Facility Emergency Response Program).

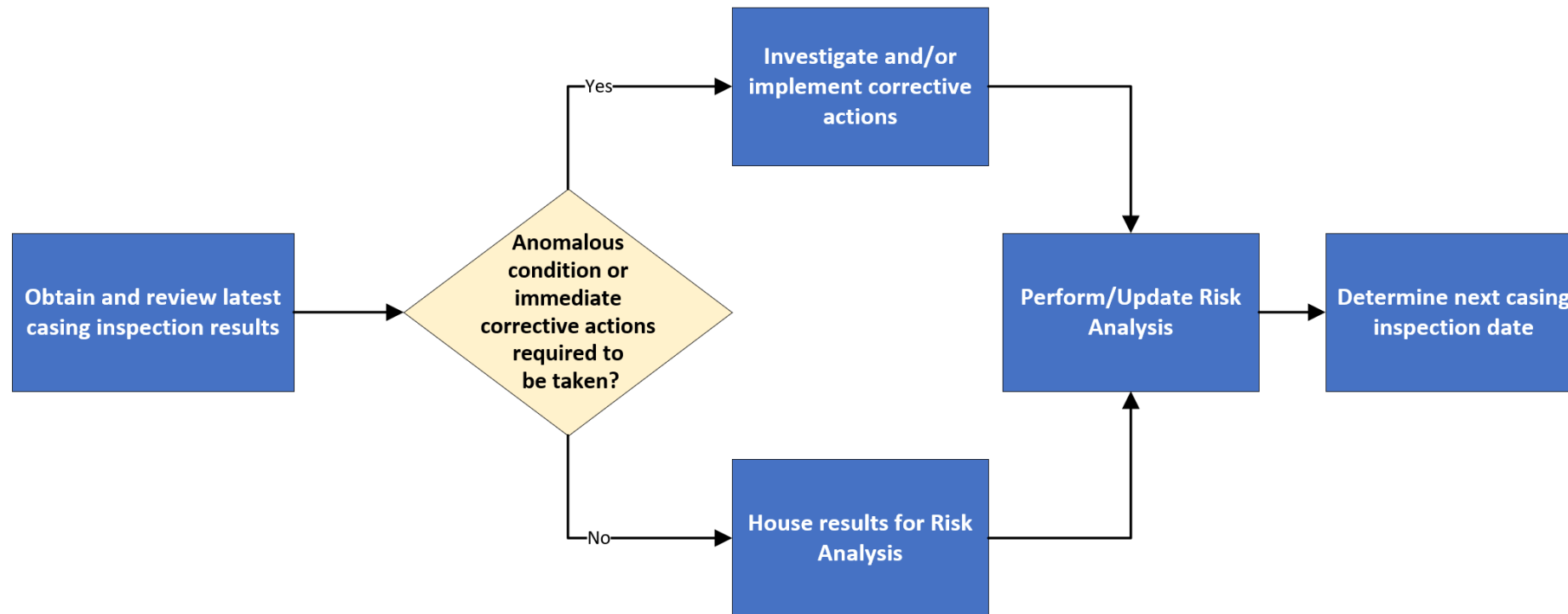


Well Work Planning and Execution (cont.)

- Once well work activities have commenced.
 - Make any required and courtesy notifications for work conducted during work (e.g., annular pressure tests, integrity log runs) via email, phone, and/or agency website.
 - As well work records become available, review and file into company intranet/file management system. This includes but is not limited to:
 - Daily reports from vendors/contractors,
 - Completed JSAs (Job Safety Analyses),
 - Tubing/casing tally sheets,
 - Pressure test data and charts, and
 - Casing inspection logs.
- Once well work activities are completed.
 - Package and submit records to state agency (as applicable/required).
 - Follow up work (e.g., evaluation and integration of casing inspection logs into risk analysis, determination of next re-assessment date)



Post Well Work Activities – Casing Inspections



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3. Site Access Control Plan				
[API RP 1170, Section 9.6]				<input type="checkbox"/> N/A
This Site Access Control Plan defines the additional site security and safety measures required to execute this work plan while ensuring the protection of operating personnel, the public, and underground natural gas storage facilities. Through the implementation of these risk mitigation measures, operations personnel are better prepared to recognize and respond to abnormal operating conditions and emergencies and to protect life and property (including the environment).				
Scope:				
Workover on de-pressurized cavern to inspect production casing string.				
<input type="checkbox"/> Not Required		<input checked="" type="checkbox"/> Required		
<input checked="" type="checkbox"/> Operations personnel understand their roles and responsibilities associated with the execution of this work plan and are capable of recognizing and responding to abnormal and emergency conditions to protect life and property.				
<input checked="" type="checkbox"/> Contractors are required to sign-in at the beginning and end of each shift.				
Normal Operations Site Security (Access Control) Measures will:				
<input type="checkbox"/> Not be altered or modified		<input checked="" type="checkbox"/> Be altered or modified		
<input type="checkbox"/> Valve Security	<input checked="" type="checkbox"/>	Jersey/Bollard Barriers	<input checked="" type="checkbox"/>	Locked Gates
<input type="checkbox"/> Security Lighting	<input checked="" type="checkbox"/>	Industrial-type steel mesh fencing	<input checked="" type="checkbox"/>	Signage
<input type="checkbox"/> Other (e.g. Wellhead enclosures):				
Notes:				



5. Well Work Procedures and Best Practices <input type="checkbox"/> N/A				
[API RP 1170, Section 7, 8.7, 8.8, 9.5]				
The following procedures and specifications are part of this work plan and have been developed in accordance with the requirements of 49 CFR §191 and §192, API RP 1170 (as incorporated by reference). This includes, but is not limited to, the development, implementation, and maintenance of programs, plans, and procedures intended to safely and effectively guide the operator in design, construction, operation, and maintenance of underground natural gas storage facilities. Examples include well drilling, workovers, casing, cementing, completion, well remediation, well closure, testing, commissioning, environmental, health, safety, and monitoring of construction activities.				
Scope:				
Workover on de-pressurized cavern to inspect production casing string.				
<input type="checkbox"/> Not Required			<input type="checkbox"/> Required	
Procedure	Procedure No.	Prepared By	Company	Note I.D.
Well ABC Well Work Program	Rev 2	John Doe	Operator	
Rig Provider Procedure(s)	2024 Rev	Jane Doe	Vendor A	
Cased Hole Logging Procedure	Rev 1.2	Jim Doe	Vendor B	
Casing/Tubing handling and running procedure	Rev 1	Jen Doe	Vendor C	
MIT Pressure Test Program	Rev 3.1	Jimmy B. Doe	Vendor D	
Notes:				



9. Emergency Response and Well Control Plan Requirements <input type="checkbox"/> N/A [API RP 1170, Section 9.7]	
<p>This section documents emergency preparedness response plans which are critical for the safe control or shutdown of the storage facility, including storage caverns and wells, in the event of a failure or emergency condition. The emergency response plan addresses gas releases, fires, fire suppression capability, explosions, loss of electricity, and loss of telecommunications services.</p>	
<p>Scope:</p> <p>Workover on de-pressurized cavern to inspect production casing string.</p>	
<input type="checkbox"/> Not Required <input checked="" type="checkbox"/> Required	
<p>Requirements Summary:</p> <ol style="list-style-type: none"> 1. Onsite company representatives or rig representatives are required to have a current well control certification. 2. Onsite company representatives or rig representatives are required to have reviewed and understand the company emergency response and well control plan. 	
<p>Emergency Response Plan Name</p> <input checked="" type="checkbox"/> Onsite <input checked="" type="checkbox"/> Reviewed <input type="checkbox"/> Needs Updating <input type="checkbox"/> Updated for planned work	
Plan Revision Date:	4/9/2024
On-Site Company Representative:	Operator Representative
Review Date:	7/22/2024
<p>Well Control Plan Name <input type="checkbox"/> Included in Emergency Response Plan</p> <input checked="" type="checkbox"/> Onsite <input checked="" type="checkbox"/> Reviewed <input type="checkbox"/> Needs Updating <input type="checkbox"/> Updated for planned work	
Plan Revision Date:	7/1/2024
On-Site Company Representative:	Operator Representative
Review Date:	7/22/2024
<input type="checkbox"/> Personnel have been briefed (and trained as needed) in their roles and responsibilities in recognizing and responding to emergencies (including blowouts).	
<p>Notes:</p> <p>Copies of the Operator Emergency Response Plan and Well Control Emergency Response Plan have been provided (Email) to contractor personnel. Up-to-date Hard copies are also onsite and available to onsite personnel.</p>	



10. Personnel Qualification Requirements <input type="checkbox"/> N/A			
[API RP 1170, Sections 5.3, 7.3.2, 8.7, 9.7.5]			
Scope:			
Workover on de-pressurized cavern to inspect production casing string.			
<input type="checkbox"/> Not Required <input checked="" type="checkbox"/> Required			
Contractors and company personnel are used to construct, operate, maintain and monitor underground storage caverns and wells. Operator relies on the specialized knowledge, skills and abilities of these personnel to design, construct, operate, inspect, test, monitor and maintain the underground natural gas storage caverns, wells, and facilities. Acceptable qualifications for contractor and company personnel may include: (1) Contractor letter of qualification, (2) Industry accepted training (e.g. IADC Well Control School), (3) formal education, (4) letter of recommendation from a recognized specialist/expert, (5) professional certification (e.g. Professional Engineer, Professional Geologist). Personnel qualified to conduct and/or supervise this workplan include:			
Name	Company	Task	Qualified By
John Doe	Operator	Program Design	Professional Certification
Jane Doe	Operator	Engineering Support	Professional Certification
Jimmy Doe	3 rd Party Engineering company	Wellsite Supervisor	Industry Accepted Training
John A. Doe	Rig Company	Rig Supervision	Industry Accepted Training
<input checked="" type="checkbox"/>	Supervisory personnel have been briefed (and trained as needed) in the supervision of the tasks/procedures (including roles and responsibilities) they are responsible for. This includes the recognition and response to abnormal operating conditions and emergencies.		
<input checked="" type="checkbox"/>	Personnel have been briefed (and trained as needed) in the performance of the tasks/procedures (including roles and responsibilities) for which they are responsible.		
<input checked="" type="checkbox"/>	Personnel have been briefed and/or trained as needed in the recognition and response to abnormal operating conditions and emergencies.		
<input checked="" type="checkbox"/>	Company has all required qualification records for contractors and company representatives.		
Notes:			



11. PHMSA Advanced Notification of Certain Work [§191.22]				<input type="checkbox"/> N/A
<input type="checkbox"/> Not Required		<input checked="" type="checkbox"/> Required		
PHMSA must be provided a 60-day advance notice of construction of a new Underground Natural Gas Storage Facility (UNGSF); or Maintenance of a UNGSF that involves the plugging or abandonment of a well, or that requires a workover rig and costs \$200,000 or more for an individual well, including its wellhead.				
UNGSF means a gas pipeline facility that stores natural gas underground incidental to the transportation of natural gas, including:				
<ul style="list-style-type: none"> - A depleted hydrocarbon reservoir; - An aquifer reservoir; or - A solution-mined salt cavern. 				
In addition to the reservoir or cavern, a UNGSF includes injection, withdrawal, monitoring, and observation wells; wellbores and downhole components; wellheads and associated wellhead piping; wing-valve assemblies that isolate the wellhead from connected piping beyond the wing-valve assemblies; and any other equipment, facility, right-of-way, or building used in the underground storage of natural gas.				
Scope:				
Workover on de-pressurized cavern to inspect production casing string.				
Select the PHMSA UNGS Notification	Notice Date:	# Days' Notice:	Notice Status:	
Type: 60 day Notice	1/8/2024	>0	Satisfies Requirement	
Select the Reason for Notification.				
Maintenance of a UNGSF that requires a workover rig and costs \$200,000 or more for an individual well, including it's wellhead				
Reason for < 60-day Notice:				
Notes:				
Type F Form submitted through PHMSA portal online under Operator OPID (ID 12345).				



12. Regulatory Agency Notification of Certain Work, Permits, and Authorizations

N/A

Scope:

Workover on de-pressurized cavern to inspect production casing string.

List all regulatory required notifications, courtesy notifications, required permits, or authorizations relating to this work plan.

Not Required

Required

LDENR

Permit

ID: 123456789

Months - before work

Notice Date: 4/8/2024

Notice Time: 9:00 AM

Fees \$125

Requirements:

Contact	Phone	Email	Note #
Office of Conservation (Injection and Mining Division)	(225) 342-5515	Injection- Mining@LA.gov	

Notes:

Form UIC-17 (Email sent on 4/8/24)

Work Permit #: 123456

Mailing Address

617 North Third Street, 9th floor
LaSalle Building
Baton Rouge, Louisiana 70802



Example Workover on a Horizontal UNGS Reservoir Well

- Horizontal I/W UNGS reservoir Well ABC
 - Drilled and completed in 1/1/2010.
 - Operator intends to perform a workover on Well ABC in 2024 to inspect and test 8-5/8" production casing as well as run and install 5-1/2" tubing and packer.
- During the workover, Operator discovers the mechanical integrity of the 8-5/8" production casing has been compromised. Operator evaluates the situation of the well and decides conduct a cement squeeze operation and run and cement a 6-5/8" liner string in the well. Furthermore, Operator will run and install 3-1/2" tubing instead.
- What regulatory requirements (Sections of 1171) are now applicable, what records must be retained to demonstrate compliance, etc?



Questions?



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