

Training and Evaluation Outline Report

Status: Approved

08 Dec 2015

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Task Number: 05-PLT-5166

Task Title: Repair an Existing Water Well

Distribution Restriction: Approved for public release; distribution is unlimited.

Destruction Notice: None

Foreign Disclosure: FD1 - This training product has been reviewed by the training developers in coordination with the Ft. Leonard Wood, MSCoE foreign disclosure officer. This training product can be used to instruct international military students from all approved countries without restrictions.

Supporting Reference(s):

Step Number	Reference ID	Reference Name	Required	Primary
	ATP 5-19 (Change 001 09/08/2014 78 Pages)	RISK MANAGEMENT http://armypubs.army.mil/doctrine/DR_pubs/dr_a/pdf/atp5_19.pdf	Yes	No
	DD FORM 2678	WELL DRILLERS LOG (LRA)	Yes	No
	FM 3-34	Engineer Operations http://armypubs.army.mil/doctrine/DR_pubs/dr_a/pdf/fm3_34.pdf	Yes	No
	NTRP 4-04.2.13/TM 3-34.49/AFMAN 32-1072	Water-Well Drilling Operations (HTTPS://NDLS.NWDC.NAVY.MIL) (https://armypubs.us.army.mil/doctrine/DR_pubs/dr_aa/pdf/tm3_34x49_PH_Navy.pdf)	Yes	Yes

Conditions: The team is given a well site with organic equipment, personnel, repair parts, and a well with one of the following conditions: dry well, inoperable pump, plugged drop pipe, broken/collapsed casing, or a broken/collapsed screen.

Note: The Commander must still determine at what level of training they would want the element to perform. Crawl, walk or run. This can only be determined after consideration as to the units training level.

The Commander prior to evaluating an element in the conduct of the task must determine if it will be conducted in a Live, Virtual, or Constructive environment, additionally it must also be determined which condition as described below that the element will conduct the task. The selection made for this task is at a trained level of proficiency. The commander must determine which of the environments below will best suit the unit and the proficiency level at which the unit is. When conducting crawl or walk level training units should not increase the intensity until the unit has achieved the standards and then unit trainers should include variables that increase proficiency in all conditions.

Note: The condition statement for this task is written assuming the highest training conditions reflected on the Task Proficiency matrix required for the evaluated unit to receive a "fully trained" (T) rating.

Note: Condition terms definitions:

Dynamic Operational Environment: Three or more operational and two or more mission variables change during the execution of the assessed task. Operational variables and threat Tactics, Techniques, and Procedures (TTPs) for assigned counter-tasks change in response to the execution of Blue Forces (BLUFOR) tasks.

Complex Operational Environment: Changes to four or more operational variables impact the chosen friendly COA/mission. Brigade and higher units require all eight operational variables of Political, Military, Economic, Social, Infrastructure, Information, Physical environment, and Time (PMESII-PT) to be replicated in varying degrees based on the task being trained.

Single threat: Regular, irregular, criminal or terrorist forces are present.

Hybrid threat: Diverse and dynamic combination of regular forces, irregular forces, and/or criminal elements all unified to achieve mutually benefiting effects. This task should not be trained in MOPP 4.

Standards: The team repairs the well to accommodate the rated pump and restores the gallons per minute (GPM) output or abandons the well by sealing it, and restores the well site.

Note: Leaders are defined as the Commander, Executive Officer, First Sergeant, Operations Sergeant, Platoon Leaders, Platoon Sergeants, Squad Leaders, and Team Leaders.

Live Fire Required: No

Objective Task Evaluation Criteria Matrix:

Plan and Prepare		Execute					Assess		
Operational Environment	Training Environment (LW/C)	Training/Authorized	% of Leaders Present at	% of Soldiers Present at	External Eval	% Performance Measures 'GO'	% Critical Performance Measures 'GO'	% Leader Performance Measures 'GO'	Task Assessment
SQD & PLT									
Dynamic (Single Threat)	Night	>=85%			Yes	>=91%		>=90%	T
	Day	75-84%	>=80%			80-90%	All		T-
Static (Single Threat)	Day	65-74%		75-79%		65-79%		80-89%	P
		60-64%		60-74%	No	51-64%			P-
		<=59%		<=59%		<=50%	<All	<=79%	U

Remarks: None

Notes: None

Safety Risk: Low

Task Statements

DANGER

Leaders have an inherent responsibility to conduct Risk Management to ensure the safety of all Soldiers and promote mission accomplishment.

WARNING

Risk management is the Army's primary decision-making process to identify hazards, reduce risk, and prevent both accidental and tactical loss. All Soldiers have the responsibility to learn and understand the risks associated with this task.

CAUTION

Identifying hazards and controlling risks across the full spectrum of Army functions, operations and activities is the responsibility of all Soldiers.

Performance Steps and Measures

NOTE: Assess task proficiency using the task evaluation criteria matrix.

NOTE: Asterisks (*) indicate leader steps; plus signs (+) indicate critical steps.

STEP/MEASURE	GO	NO-GO	N/A
+* 1. The element leader supervises the repair operations.			
+ a. Starts a Department of Defense (DD) form 2678 (Well Drillers Log) or continues the existing log.			
b. Establishes work site limits, parking areas, and latrine locations.			
+ c. Requests engineer support to prepare the site, if required.			
+ 2. The element determines the cause of the malfunction.			
+ a. Determines if the pump is receiving power.			
(1) Checks breakers/fuses.			
(2) Checks control box.			
(3) Performs Ohm test.			
(4) Tests pressure switch.			
+ b. Inspects the drop pipe and pump for serviceability.			
(1) Removes the drop pipe and the pump.			
Note: If the drop pipe and pump cannot be removed follow abandonment procedures.			
(2) Unplugs clogged drop pipe sections.			
(3) Replaces unserviceable drop pipe sections.			
(4) Repairs or replaces frayed or damaged wire.			
(5) Determines if the pump is serviceable.			
(6) Replaces the pump if required.			
+ c. Inspects casing and screen.			
(1) Assesses damage to casing and screens.			
(2) Redrills the well as required.			
+ d. Determines if the well will sustain a pump.			
(1) Performs well development.			
(a) Installs rotary drill equipment.			
(b) Places required drill steels, slips, and jetting tools in accessible locations.			
(c) Installs the drill string to the top of the screen with the jetting tool.			
(d) Determines which chemicals to use to dissolve deposits in the screens.			
Note: Contact between Muriatic acid and metal casings produces hydrogen gas, which can form flammable or explosive mixtures in air. It will also generate heat when mixed with alkalies. Always consult Material Data Safety Sheets (MSDS) when using chemicals.			
1 Places enough muriatic acid into the well to fill the screens.			
2 Places enough sodium hexametaphosphate mixed with water to equal 3,000 to 5,000 parts per million (ppm) into the screens.			
(e) Starts to develop the well with water and low pressure using a surging method (air or water).			
(f) Waits 1 to 2 hours to allow the well to set.			
(g) Adds 50 to 100 parts per million (ppm) calcium hypochlorite to the well and lets it stand for 1 hour.			
(h) Surges the well using low pressure for 30 minutes.			
(i) Surges the well using medium pressure for 2 to 3 hours.			
(j) Bails or pumps out the well.			
(k) Waits 2 to 4 hours to allow the well to set.			
(l) Bails or pumps out the well.			
(m) Determines if the development made an improvement in the well.			
Note: If the well has improved, the team repeats steps as needed using medium to high pressure. On the last surge, add calcium hypochlorite to provide 50 parts per million (ppm) chlorine. If the well has improved, repeats steps as needed until repeated four times or until the well is clean.			
(2) Performs a draw-down test for a new static-water level, and determines the well output.			
(3) Pumps the well for a minimum of 3 hours to clean out all acids.			
(4) Abandons the well if the well will not sustain a pump.			
+ 3. The element performs abandonment procedures, when required, by sealing off the casing using one of the following methods:			
a. Welds or glues a cap to the casing.			
+ b. Fills the well casing with dirt, gravel, mortar, Portland cement, or debris that will not contaminate the water table.			
+ c. Places a cover over the well casing and cements a cap that was at least 3 inches thick around the casing.			
+ 4. The element redrills the well when required.			
+ a. Uses a bit that is slightly smaller than the casing.			

+ b. Recases the hole using casing with the same outside diameter as the drill bit.			
+ c. Ensures that the screens were placed in the exact same location as the screens of the existing well.			
+ d. Replaces the pump and drop pipe.			
+ e. Performs a draw-down test for a new static-water level, and determines the well output.			
+* 5. The element leader conducts a drill site turnover to the Operations and Training Officer (US Army) (S3) or to the next higher element.			

TASK PERFORMANCE / EVALUATION SUMMARY BLOCK							
ITERATION	1	2	3	4	5	M	TOTAL
TOTAL PERFORMANCE MEASURES EVALUATED							
TOTAL PERFORMANCE MEASURES GO							
TRAINING STATUS GO/NO-GO							

ITERATION: 1 2 3 4 5 M

COMMANDER/LEADER ASSESSMENT: T P U

Mission(s) supported: None

MOPP 4: Never

MOPP 4 Statement: None

NVG: Never

NVG Statement: None

Prerequisite Collective Task(s): None

Supporting Collective Task(s):

Step Number	Task Number	Title	Proponent	Status
5.	05-CO-0018	Conduct Report Procedures	05 - Engineers (Collective)	Approved

OPFOR Task(s):

Task Number	Title	Status
71-2-9002	OPFOR Ambush(Company and below)	Approved
71-CO-9004	OPFOR Reconnaissance Attack (Company and below)	Approved

Supporting Individual Task(s):

Step Number	Task Number	Title	Proponent	Status
	052-12N-4001	Manage a Horizontal Construction Project	052 - Engineer (Individual)	Approved

Supporting Drill(s): None

Supported AUTL/UJTL Task(s):

Task ID	Title
ART 4.1.7.3	Provide Technical Engineer Support

TADSS

TADSS ID	Title	Product Type	Quantity
No TADSS specified			

Equipment (LIN)

LIN	Nomenclature	Qty
No equipment specified		

Materiel Items (NSN)

NSN	LIN	Title	Qty
No materiel items specified			

Environment: Environmental protection is not just the law but the right thing to do. It is a continual process and starts with deliberate planning. Always be alert to ways to protect our environment during training and missions. In doing so, you will contribute to the sustainment of our training resources while protecting people and the environment from harmful effects. Refer to the current Environmental Considerations manual and the current GTA Environmental-related Risk Assessment card. .

Safety: In a training environment, leaders must perform a risk assessment in accordance with ATP 5-19, Risk Management. Leaders will complete the current Deliberate Risk Assessment Worksheet in accordance with the TRADOC Safety Officer during the planning and completion of each task and sub-task by assessing mission, enemy, terrain and weather, troops and support available-time available and civil considerations, (METT-TC). Note: During MOPP training, leaders must ensure personnel are monitored for potential heat injury. Local policies and procedures must be followed during times of increased heat category in order to avoid heat related injury. Consider the MOPP work/rest cycles and water replacement guidelines IAW FM 3-11.4, Multiservice Tactics, Techniques, and Procedures for Nuclear, Biological, and Chemical (NBC) Protection, FM 3-11.5, Multiservice Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Decontamination. .