



## 10. Mining Machine Operator Manual

### General Overview:

Seated experience.

- In Machine Operator, the user drives a cable shovel excavator and needs to fill up to haul trucks full of dirt that contains hematite rock.
- This step in the mining process is after the mine has been constructed but before the materials are shipped off to processing plants where the raw ore is turned into iron ore pellets the user can see this processing plants near the top of the area and the distance
- Driving a large machine like the cable shovel excavator is a very slow process as these machines are very large.

### Macros / Shortcut keys:

T = turn teleportation on or off

R = reset the player's view

K = resets the location of the key

Y = inserts the key into the ignition and starts the machine

N = removes the key from the ignition and turns off the machine

**Wrist Watch:** The wrist watch is always on the user's left wrist. When a call is coming in for the user, the icon on the watch will be an orange vibrating phone (Image 1 below). They must place their right hand on top of the watch and a blue circular progress bar will fill up (Image 2 below). Once it is filled, the call will be answered and the watch icon will become a green chat bubble (Image 3 below). When the call is finished, the watch icon will become a yellow question mark (Image 4 below). When the yellow question mark is visible, the user can place their right hand on top of the watch and the narrator will repeat the last set of instructions.

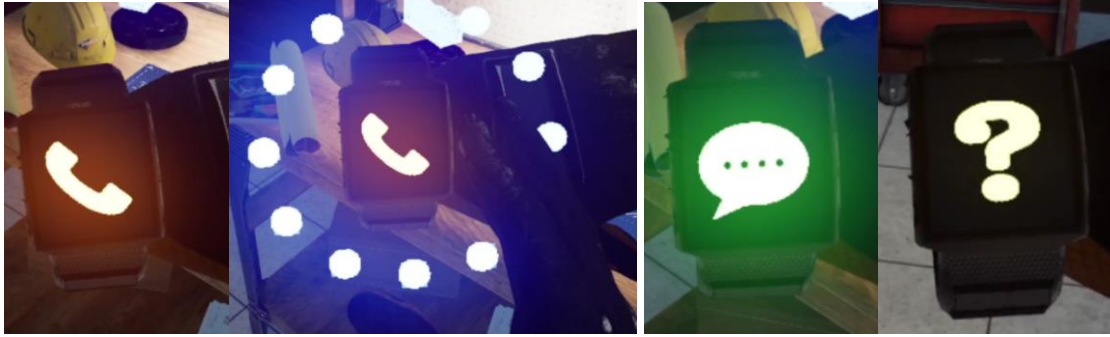


Image 1

Image 2

Image 3

Image 4

**Facilitator Panel:** The facilitator panel is an options menu that allows a simulation facilitator to adjust gameplay and accessibility options while a user is inside the experience. To access the facilitator panel during the simulation, press the TAB key.



There are five core options from this menu:

**Hint Task:** When pressed, the in-game narrator will repeat their most recent instruction, which is helpful if the user misses something or is distracted while in the simulation.

**Print Screen:** This button will save a screenshot of the current view that the user sees.

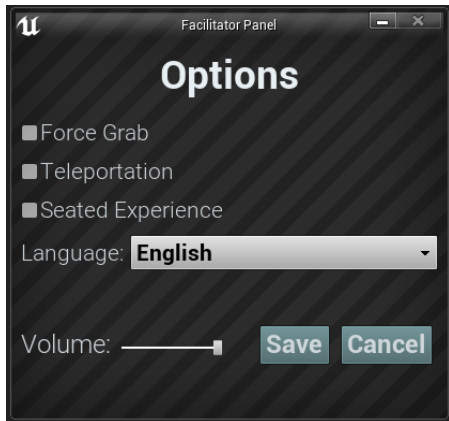
**Settings:** This will bring the facilitator into a separate menu screen where they have multiple options to change the experience. This is detailed below.

**Restart:** This will restart the simulation from the very beginning.

**Quit:** This will exit the experience.

**Greyed out buttons:** Finish Task & Restart Task - These functions are not currently working but will be implemented in the near future.

**Settings:** The gameplay settings have an additional set of toggles and sliders the facilitator can adjust during the simulation.



**Force Grab:** If someone is unable to reach something or is running the experience while seated, this option allows the user to grab objects without being directly next to them. The user can point their hands at objects that are far away and pulling the trigger will bring the object into their hand, grabbing it

**Teleportation:** This will turn on the granular teleportation around the game world. To use teleportation 1) hold down the center thumbpad button (Vive Pro) or push forward on the thumb joystick (Oculus Rift S) to create a blue teleportation arc 2) select a location to go by moving the controller until the blue circle at the end of the arc is in the desired location (A red line means that locations is not valid or blocked) and 3) release the center thumbpad button (Vive and Vive Pro) or thumb joystick (Oculus Rift S) which will cause the screen will quickly fade to black and when it fades back in, the user will be in a new location.

**Seated Experience:** When turned on, this option will move the user's location in the game world to be higher up, so that if they are sitting down, their view will be similar to a standing position.

**Language:** This drop-down menu will allow the facilitator to change the language of the experience. When changing language, the simulation will need to restart.

**Volume:** This slider will adjust the master volume of the game. If the sliding bar is on the right side, the volume will be at 100% and on the left side, the volume will be set to 0%.

**Full written walkthrough:**

Quest	Task	Description
1	A	Answer watch, hold right hand above the watch icon on left hand
1	B	Listen to introduction about the career
1	B2	Press the button to travel into the operator's cab of the machine
1	B3	Listen to introduction about the operator's cab

1	C	Grab the key on the left side of the driver's seat
1	D	Insert the key into the ignition to start the machine
1	E	Listen to an explanation of driving
1	F	Push the front right joystick all the way forward to move the machine to the left
1	G	Push the front left joystick all the way forward to move the machine to the right
1	H	Move the machine forward by pushing the front right and left joysticks forward at the same time
1	I	Move the machine backward by pulling the front right and left joysticks backward at the same time
1	J	Listen to an explanation of the shovel and cab controls
1	K	Rotate the cabin left by pushing the smaller left joystick to the left
1	L	Rotate the cabin right by pushing the smaller left joystick to the right
1	M	Push the right joystick forward to move shovel out and up
1	M2	Get information about the cable shovel monitor
1	N	Press the large release button on the left to open the shovel
1	O	Pull the right joystick back to move shovel down
1	P	Listen to information about your next steps
2	A	Go to dig site 1 by following the guided path. Optional: Skip the driving section by pressing the skip driving button on the left
2	B	Listen to the information about how to complete the first dig
2	C	Fill up the shovel by digging into the wall and then move the shovel overtop of the haul truck
2	E	Release the contents into the haul truck by pressing the large button on the right
2	F	Go to dig site 2 by following the guided path. Optional: Skip the driving section by pressing the skip driving button on the left
2	G	Fill up haul truck 2
3	A	Drive to the final location. Optional: Skip the driving section by by pressing the skip driving button on the left
3	B	Turn off excavator by grabbing the key out of the ignition
3	C	Listen to final notes from the narrator
3	D	No Dialogue - wait for simulation to end

## Map

The user will work in a large open pit mine primarily on the bottom area where the two haul trucks are located.



**Location 1 - Outside:** There are two locations the user will experience in the simulation. The first location is where the user will begin the experience and it is outside the excavator overlooking the mining pit. This is to give the user an overview of the area and get to see how large the machine is before pressing a large button to be moved inside the cable shovel excavator.



**Location 2 - The Operator's Cab:** The second area is inside the operator's cab of the cable shovel excavator and is where the user will be controlling the machine they will spend the remainder of the simulation inside the operator's cab.



### **Key Objects**

Note: Some objects will not be visible at the beginning of the tutorial and will only appear when they are required.

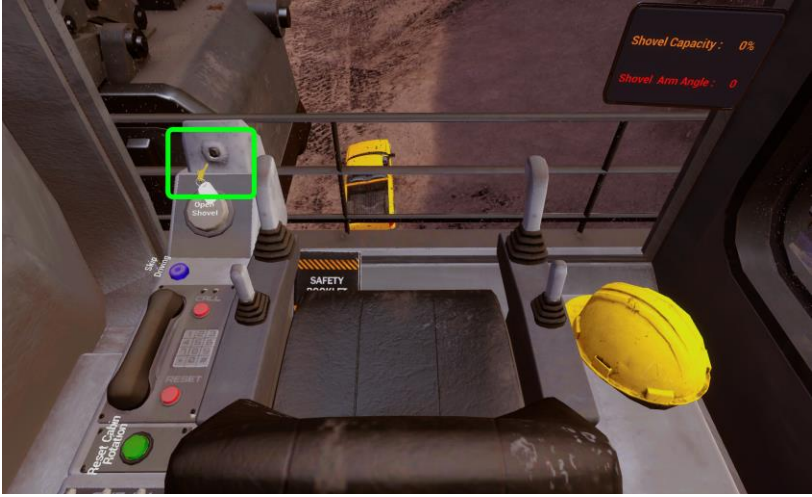
**Cable Shovel Excavator:** This is the main vehicle that the user will operate in this simulation. They can control the excavator using several joysticks and buttons, all detailed below.



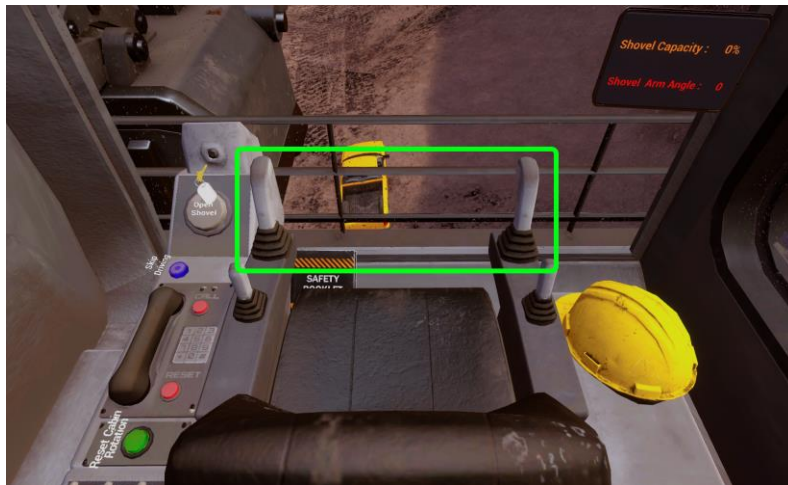
**Cable Shovel Excavator Controls:** Below is an overview image of the entire operator’s cab. The specific controls are detailed below



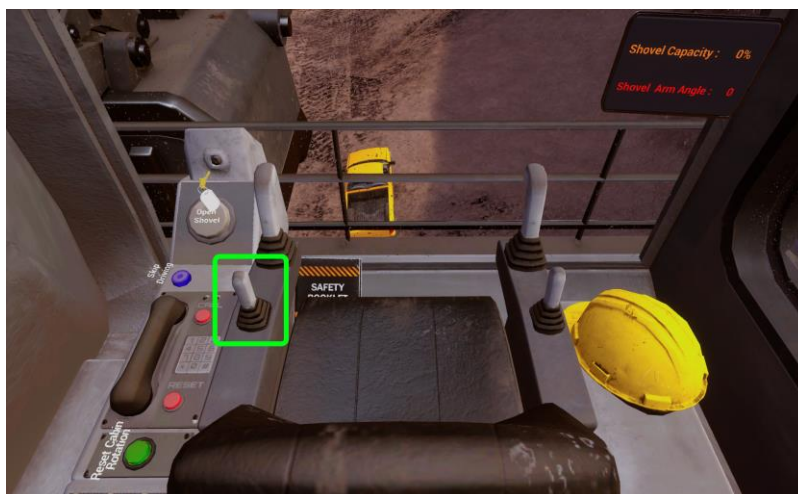
**Key and Ignition:** When the user enters the operator’s cab there will be a key for the machine on the left side. The user can grab and then place it into the ignition starting the machine. Once the machine is on, the key becomes ungrabbable and remains in place until the end of the simulation when the user can take the key out to finish the experience.



**Front left and right joysticks:** There are two large joysticks on the left and right side of the operator's cab that are used to control the Treads of the stable shovel excavator. By pushing the right front joystick forward it will turn the excavator to the left and by pushing the front left stick forward it will turn the excavator to the right. To drive forward, push both joysticks forward at the same time then to drive backward, pull both joysticks backward at the same time. There are boundaries to this simulation so if the user tries to drive out of the area or into the walls of the mine, an autopilot will be activated and will push the user back a few feet.



**Left joystick:** The smaller left joystick rotates the operator's cab of the excavator to the left or right independent of the treads. Pushing the small left joystick to the left will turn the cab to the left and pushing it to the right rotates the cab to the right. Using this joystick can be confusing for some people as it will rotate the cab but not the threads. Therefore if you turn the cab 90 degrees to the left using this joystick then drive forward it will seem as though the excavator is driving to the right if people get confused and don't know how to drive forward press the reset orientation button and the cab will spin so that it is lying perfectly with the treads.

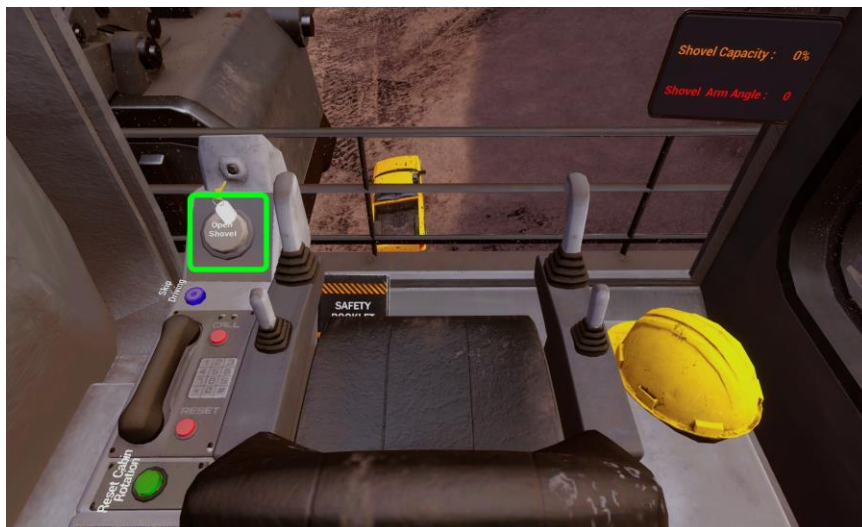




**Right joystick:** The smaller right joystick controls the shovel of the excavator. Pushing it forward will move the shovel away from the cab allowing you to dig into the walls of the mine. Pulling it towards you will bring the shovel back down towards the ground. Once the shovel is full, it must be raised to an angle of 80° or above in order to be able to open and dump the contents into the Haul trucks.



**Shovel dump button:** The dump shovel button is on the left side of the cab just underneath the key in the ignition. During the tutorial the button will not be visible at the beginning. The button will appear as the tutorial progresses when the user needs to press it. Pressing the button will open up the bottom of the shovel, allowing the contents to be released. This button will only work if the shovel arm angle is above 80 degrees and the user has the shovel above a Haul truck. The one exception to this is during the tutorial, the shovel will open when empty as a part of learning how to control the machine.



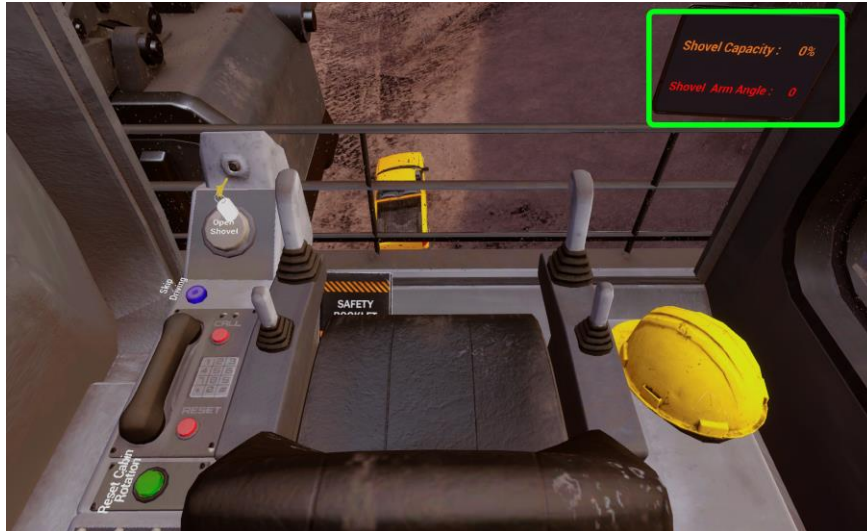
**Skip driving button:** The skip driving button is on the left side of the cab. During the tutorial the button will not be visible at the beginning. The button will appear as the tutorial progresses when the user needs to press it. Pressing this button will skip the driving portions of the simulation and bring the user just in front of where they need to be. This is to help with people who are susceptible to motion sickness.



**Reset orientation button:** The reset orientation button is located on the left side of the cab. This button will reset the orientation of the cab so that it is in line with the treads. This is useful if the user uses the small left joystick to rotate the cab and cannot get it free aligned properly with the treads.



**Monitor:** The machine operator has a monitor on the right side of the operator's cab. It displays two pieces of information, the capacity of the shovel and the angle of the shovel arm. When the shovel arm angle is 80 or above, the color becomes green to let the user know that they can unload the contents into the haul trucks.



**Haul Trucks:** There are two haul trucks located inside the mine that need to be filled up to progress the simulation. In order to fill up the haul trucks, the user must dig into the walls next to the haul trucks with the shovel and collect at least some amount of material. The user then needs to get the shovel above the haul trucks, with the shovel arm angle being above 80°. They can then press the release contents button to dump the collected material into the haul track. The haul trucks need to be filled twice before they are full and then they will drive up to the processing plant where the materials will be dropped off.



**Dig Site 1:** The first dig site is located at the bottom of the ramp when the user first drives down. The wall the user must dig into is the one to the left of the haul truck.



**Dig Site 2:** The second dig site is located on the far side of the bottom area, across from the first dig site. Again, the user must dig into the wall to the left of the haul truck.



**Freeplay vs. Tutorial:**

In the tutorial, the narrator will walk the user through how to drive the cable shovel excavator first and then navigate them to the bottom of the mine where they need to dig into the walls and fill up two haul trucks. During the tutorial, not all of the machine's controls will be activated at the very beginning. As they progress through the tutorial, the various controls inside the operators cab will unlock allowing them to control all aspects of the machine by the end of the first section. Once they have filled up both haul trucks, the narrator will direct them to a final parking location where they can turn off the vehicle, ending the simulation.

In freeplay, the user starts in the same location and is able to control all parts of the machine right away. They can drive down into the mine and start filling up the haul tracks. Once one whole truck is filled they can move on to the second one. When the second one is filled, the first Haul truck will reappear empty so the user can fill it up again. From this point on, when a whole truck is filled the other one will reappear, allowing the user to continue the experience indefinitely.