Kerbal Space Program - Bug #5948

Drill at low efficiency (due to internal temperature) remove resources from asteroids as if it were at 100% efficiency

11/14/2015 03:24 PM - Ididitthestupidway

Status:	Not Fixed	**Start date:**	11/14/2015
Severity:	Normal	**% Done:**	50%
Assignee:			
Category:	Gameplay		
Target version:			
Version:	1.0.5	**Language:**	English (US)
Platform:	Win32	**Mod Related:**	No
Expansion:			

Description

Disclaimer:
I'm not sure if it's a bug or just working as intended, however, it seems weird (and is quite annoying).

Description:
When activating a *'Drill-O-Matic' Mining Excavator* to get ore from an asteroid, the ore produced per second is now (as of 1.0.5) proportional to the "efficiency" of the drill, which is modified by its internal temperature. However, is it intended that the resources are always removed from the asteroid at the same rate, which correspond to a 100% efficiency of the drill?

On these screenshots (http://imgur.com/a/4dlc5) you see the asteroid before and after filling a small holding tank. To get 3 tonnes of ore in the tank, the asteroid lose ~29 tonnes of resources. It means that drilling results in a net loss of mass for the craft+asteroid assembly. The temperature of the drill was at ~750K during most of the drilling, which gave an efficiency of ~10%.

Steps to replicate:
1) Launch the linked save
2) Control the craft named "Mars Lab"
3) Deploy and activate the *'Drill-O-Matic' Mining Excavator*
4) Observe the mass of resources left in the asteroid and/or the mass of the craft+asteroid assembly

The same result is observed on other asteroids (the "Asteroid_ISRU_3" craft orbiting Kerbin or "Asteroid_ISRU_2"). These crafts were launched and did a rendez-vous with the asteroids before 1.0.5.

Related issues:

Related to Kerbal Space Program - Bug #5209: Ore mining is sometimes instant	**Closed**	**07/04/2015**

History

#1 - 11/17/2015 12:25 AM - Squelch

- Related to Bug #5209: Ore mining is sometimes instant added

#2 - 11/17/2015 01:23 PM - sal_vager

- Severity changed from High to Normal

Hi, please be mindful of the bug reporting guidelines and priority table when reporting issues, thank you.

http://bugs.kerbalspaceprogram.com/projects/ksp/wiki

#3 - 11/17/2015 01:24 PM - sal_vager

- Platform Win32 added

- Platform deleted (Win64)

Also, KSP for 64bit Windows does not exist yet.

#4 - 07/17/2016 09:41 AM - TriggerAu

- Status changed from New to Needs Clarification

#5 - 10/13/2016 01:19 PM - sal_vager

- Status changed from Needs Clarification to Ready to Test

- % Done changed from 0 to 80

A related issue was solved, so can you guys check this please :)

#6 - 11/26/2016 09:57 AM - alm

- File quicksave.sfs added

- Status changed from Ready to Test to Not Fixed

- % Done changed from 80 to 50

I'm not the original poster, but I am able to replicate this issue in both KSP 1.1.3 and KSP 1.2.1.1604 (vanilla install without mods, freshly downloaded from GOG) on Linux. I docked a spacecraft with a single Drill-O-Matic mining excavator and a small holding tank (no ISRU or engineer to complicate the matter), and registered the mass of the asteroid (as shown by right clicking on the asteroid) and the mass and volume of the ore in the holding tank (assuming 1 unit of ore = 0.01t, the ratio given by the VAB).

After starting the drilling, the asteroid lost mass at a constant rate (kg / s). However, ore gain would depend on the thermal efficiency of the drill: at 5% efficiency, the rate of ore mass gain would be approximately 1/20th of the rate at 100% thermal efficiency. I observed the same behavior in KSP 1.1.3.

In KSP 1.1.3 the gain in ore mass would balance the loss of asteroid mass (i.e. mass was conserved, as you would expect from a solar-powered mining operation) at 100% drill efficiency. However, in KSP 1.2.1 even at 100% thermal efficiency two tons of asteroid mass would be consumed for every one ton of ore. Not sure if this change was on purpose, I did not find any reference in the changelog. So I would argue that drilling of asteroids got worse as far as conservation of mass is concerned ;). Let me know if you want me to file a separate bug for this related issue.

Attached is a save file from a sandbox game from vanilla 1.2.1 with a single ship docked to an asteroid before any mining took place. To replicate, just deploy the drill, start mining and observe the asteroid mass and amount of ore in the tank.

#7 - 04/19/2017 12:31 PM - alm

Just ran the test again with my previously posted save file in vanilla 1.2.2.1622 (64-bit Linux from GOG), and as far as I can tell both bugs I encountered related to conservation of mass during asteroid mining are fixed. The ore mass gained now balances the asteroid mass lost, regardless of the thermal efficiency of the drill.

Files

DunaLabDocked.sfs	3.66 MB	11/14/2015	Ididitthestupidway
quicksave.sfs	96.1 KB	11/26/2016	alm