TASK #1 – Nuclear Fission – TEACHER LED  
<https://phet.colorado.edu/en/simulation/legacy/nuclear-fission>

Fission: One Nucleus - *Fill out the chart based on your observations and our discussions:*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 1 | Which isotope are we starting with? |  | 4 | Why did this happen? |  |
| 2 | What particle am I adding to the Parent isotope? |  | 5 | 1 Look at the energy graph – explain how the stability is related to the energy | |
|  | |
| 3 | What happens after I add the particle? |  |

Chain Reaction **-** *Describe what happens when adding a neutron to each situation:*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 1 | 1atom of U-235 |  | 6 | 50 atoms of U-238 |  |
| 2 | 25 atoms of U-235 |  | 7 | 100 atoms of U-238 |  |
| 3 | 50 atoms of U-235 |  | 8 | 25 atoms of U-235 and 50 atoms of U-238 | |
| 4 | 100 atoms of U-235 |  |
| 5 | 1 atom of U-238 |  |  |  | |

Nuclear Reactor- *Fill out the chart based on your observations and our discussions:*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1 | Which radioactive element is inside the nuclear reactor? |  | 6 | Describe what happens when we fire a neutron and the control rods are partially in |
|  |
| 2 | Which particle am I firing into the reactor? |  |
| 3 | What part of the reactor am I adjusting in and out? |  | 7 | Describe what happens when we fire a neutron and the control rods are all the way OUT |
|  |
| 4 | What am I graphing and monitoring on the side |  |
| 5 | Describe what happens when we fire a neutron and the control rods are all the way in | | 8 | Describe how the control rods function as a safety device in a real nuclear power plant |
|  | |  |