MPACT crashes with AIC control rods and FeCrAl guide tubes

Unrelated to data libraries

It was reported that cases with FeCrAl cladding and AIC control rods would crash during cross section calculation without any useful error.

The problem was identified and reported by Vincent Novellino, a summer intern with CASL. He provided an input that was used to verify the issue.

Any case with a combination of AIC and FeCrAl could manifest it if the control rod moves. When the rod moves, internal resonance logic was not being properly updated. It should be noted at MPACT inserts the rod fully during initialization then moves the rod to the user-specified location, so any non-fully inserted position should demonstrate this.

Minimal from the view that not many users are exploring ATF concepts. Large from the view that the case dies very early.
<table>
<thead>
<tr>
<th>Frequency/likelihood of error occurring</th>
<th>Unlikely given this is still an in-development capability that few users need.</th>
</tr>
</thead>
<tbody>
<tr>
<td>How can users determine if error affects their calculations?</td>
<td>If the case crashes during the first XS calculation after moving AIC control rods with FeCrAl cladding, it is likely this error.</td>
</tr>
<tr>
<td>What action should users take if error affects them?</td>
<td>Options include changing the rod and cladding type, removing control rods, or waiting for the next release.</td>
</tr>
<tr>
<td>Is correction to code/data available?</td>
<td>This fix for this has been pushed to the master branch and will be available in the next release.</td>
</tr>
<tr>
<td>How to obtain/install correction</td>
<td>Wait for future release.</td>
</tr>
</tbody>
</table>

**ADDITIONAL COMMENTS:**

**RESOLUTION:**

- [ ] Pending
- [x] Fixed
- [ ] Deferred
- [ ] Can’t be fixed
- [ ] Irreproducible
- [ ] As designed

**COMPLETED BY:** Shane Stimpson  
**DATE:** 08/03/2019

**PSM APPROVAL:**  
**DATE:** 08/03/2019

**VSM APPROVAL:**  
**DATE:** 08/05/2019