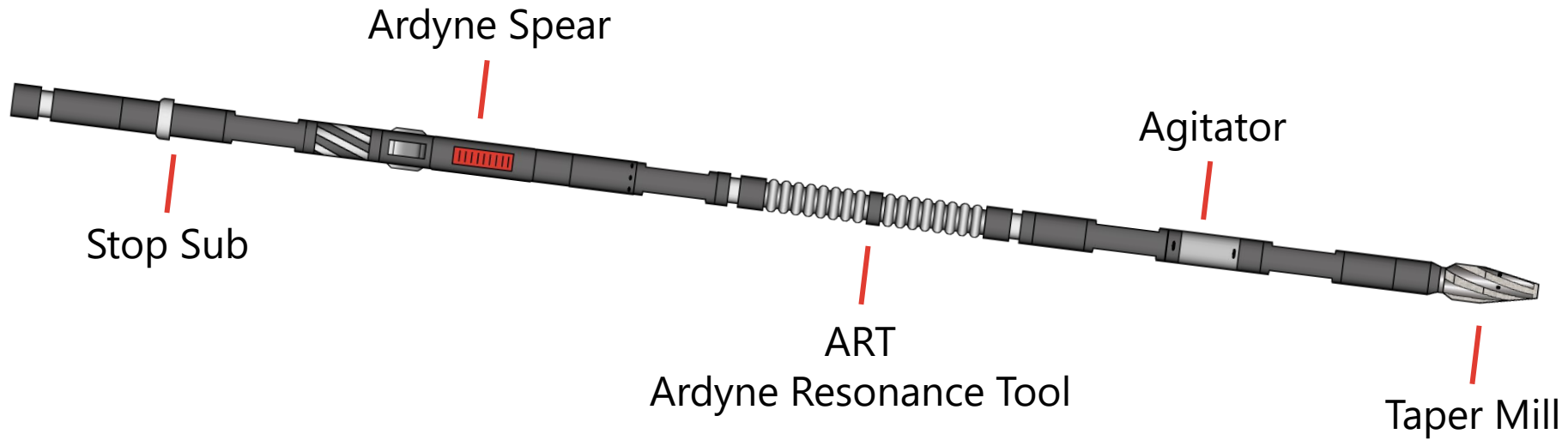




# ARDYNE RESONANCE TOOL CONFIGURATIONS

ORIGINAL INSIGHT

# RECOVERY WITH RESONANCE

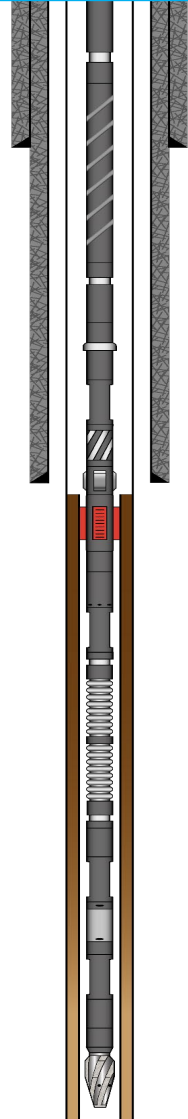


# RECOVERY WITH RESONANCE

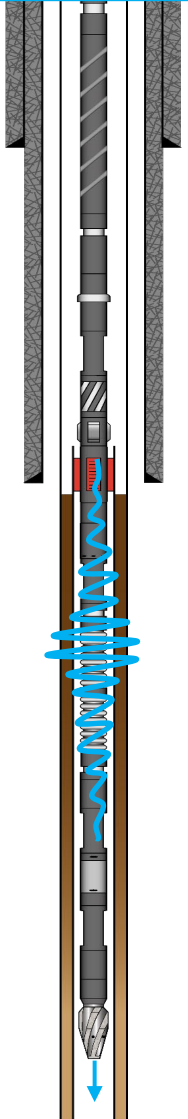


1. RIH engage spear in top of casing, attempt pull with rig
2. Flow through BHA to activate ART – resonant forces applied via casing spear, loosening bond and enabling recovery with less friction
3. Once casing is free recovery completed with rig

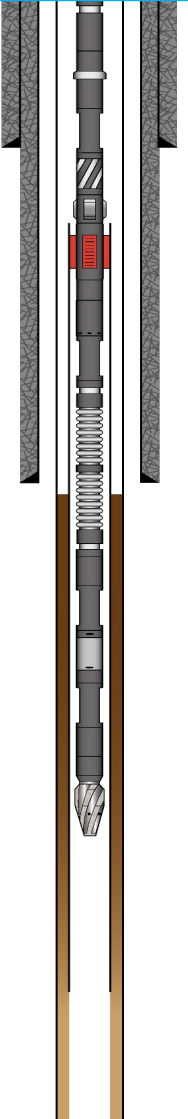
Step 1



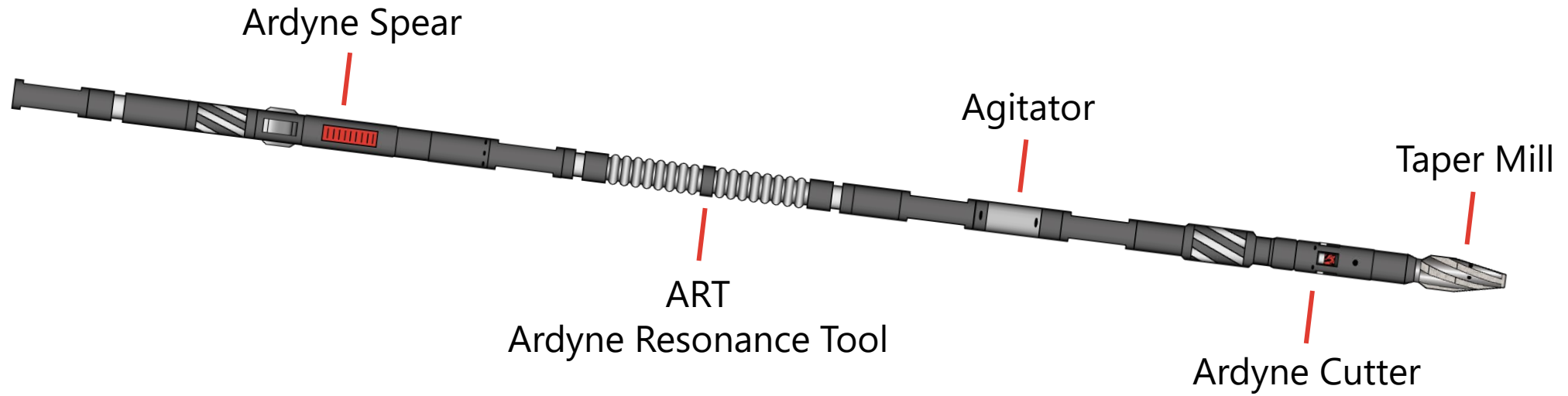
Step 2



Step 3



# CUT & RECOVER WITH RESONANCE

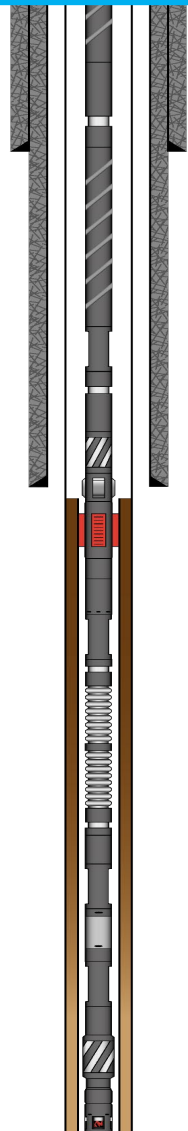


# CUT & RECOVER WITH RESONANCE

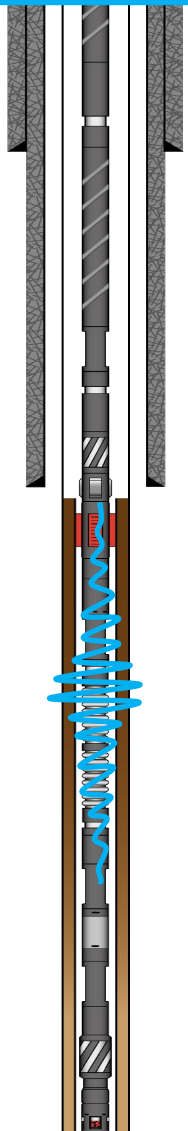


1. RIH engage spear in top of casing, attempt pull with rig
2. Flow through BHA to activate ART – No success
3. Relocate to contingency cut depth – Make cut
4. Pick to top of casing, engage spear – attempt rig pull, if no success – activate ART and pull casing free with resonance assist
5. Once casing is free recovery completed with rig

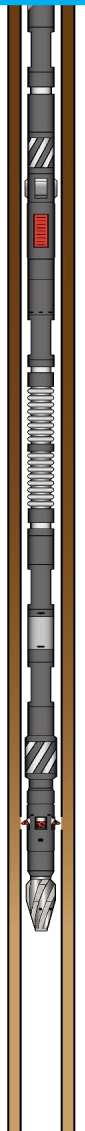
Step 1



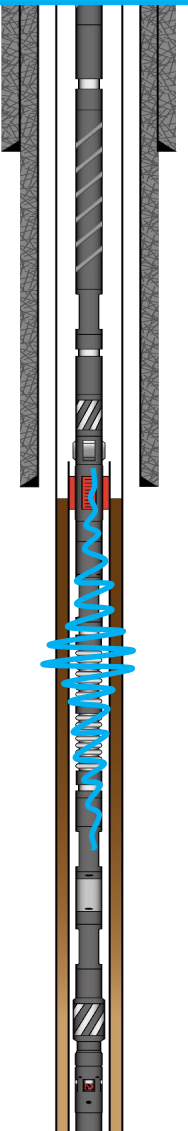
Step 2



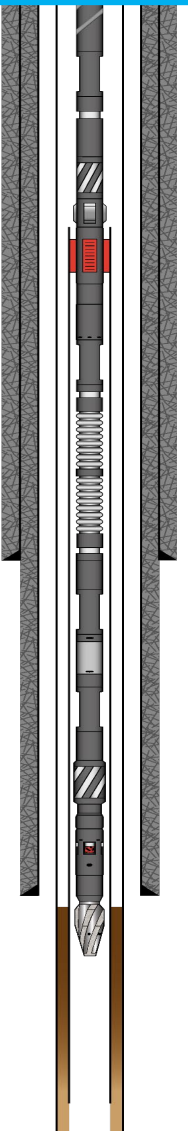
Step 3



Step 4



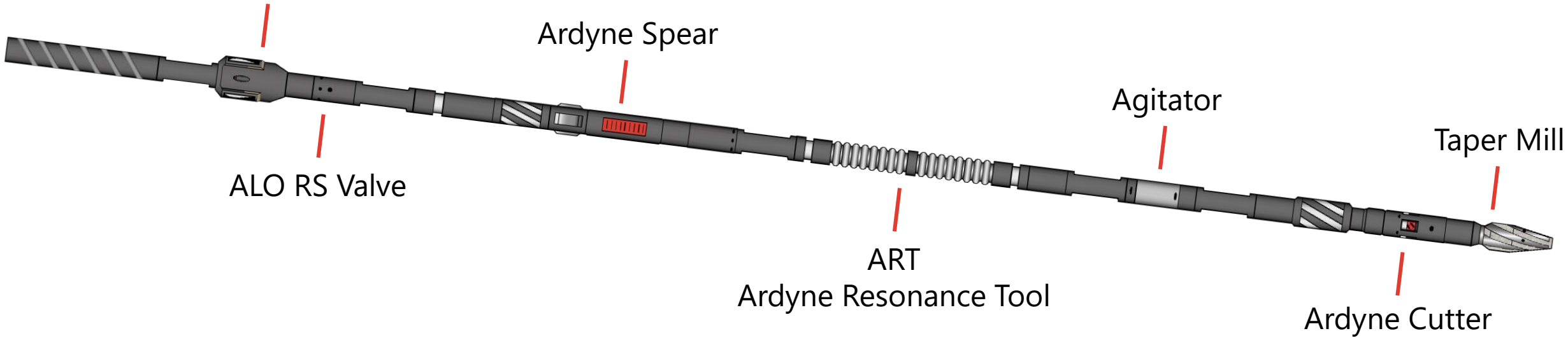
Step 5



# CLEAN UP, CUT & RECOVER WITH RESONANCE



Underreamer RS



ALO RS Valve

Ardyne Spear

ART

Ardyne Resonance Tool

Agitator

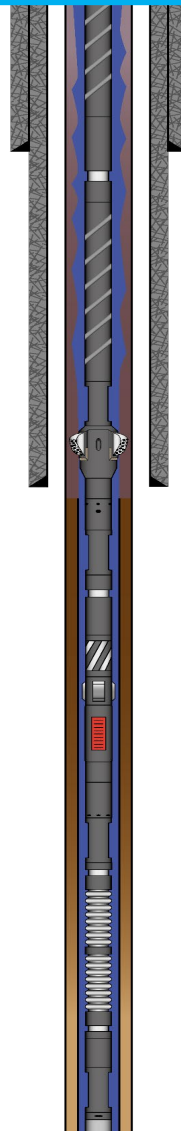
Ardyne Cutter

Taper Mill

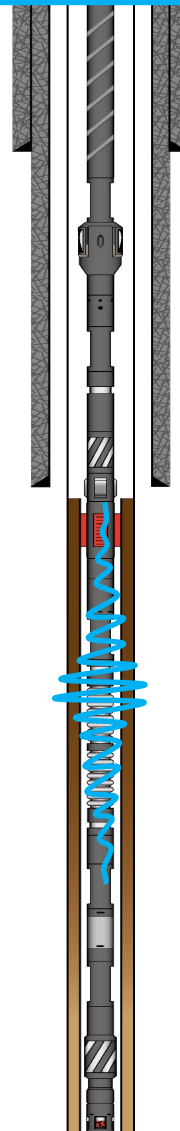
# CLEAN UP, CUT & RECOVER WITH RESONANCE



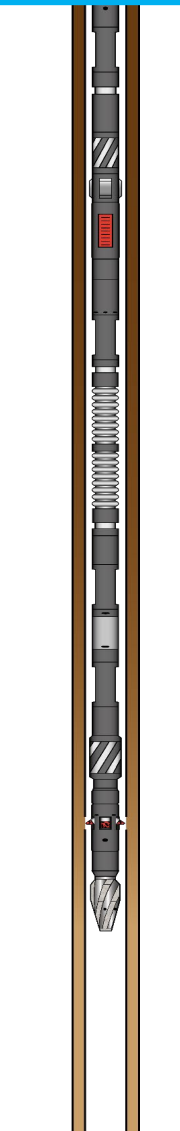
Step 1



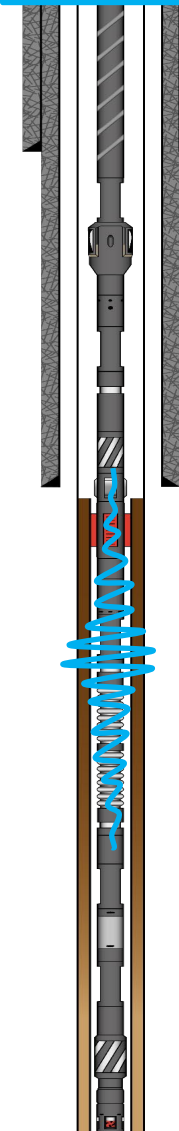
Step 2



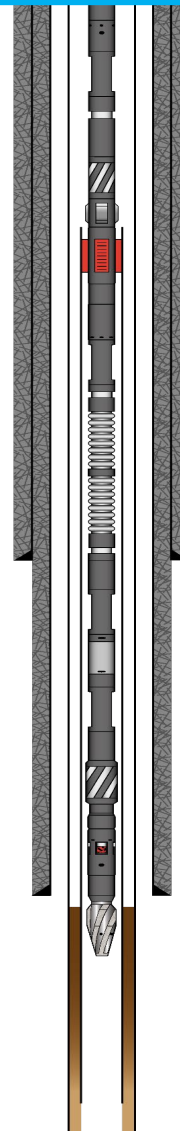
Step 3



Step 4

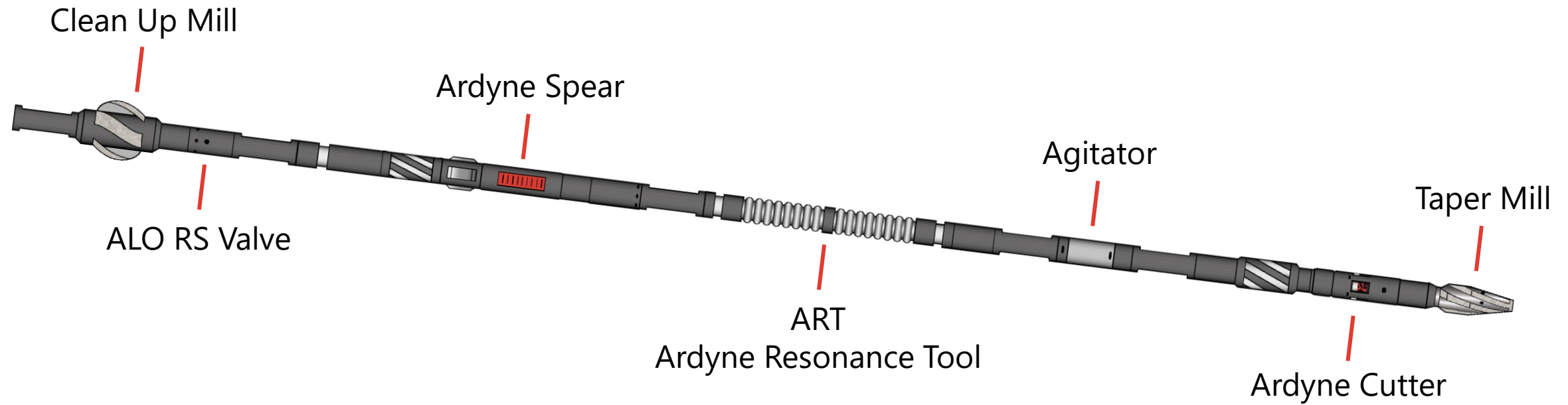


Step 5



1. RIH and commence clean up with Underreamer to desired depth
2. Engage spear in top of casing, attempt pull with rig
  - Flow through BHA to activate ART – No success
3. Relocate to contingency cut depth – Make cut
4. Pick to top of casing, engage spear – attempt rig pull if no success – activate ART and pull casing free with resonance assist
5. Once casing is free recovery completed with rig

# CLEAN UP, CUT & RECOVER WITH RESONANCE

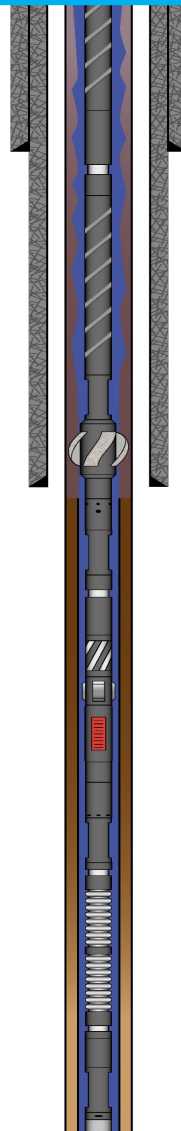




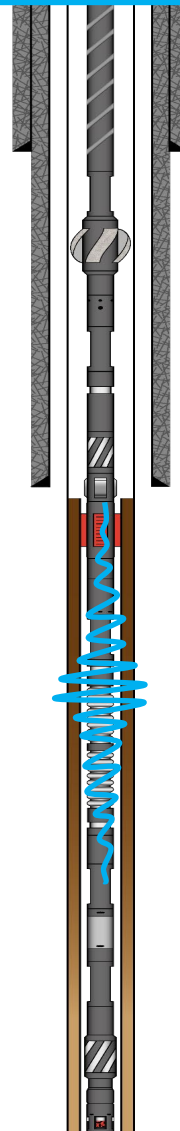
# CLEAN UP, CUT & RECOVER WITH RESONANCE



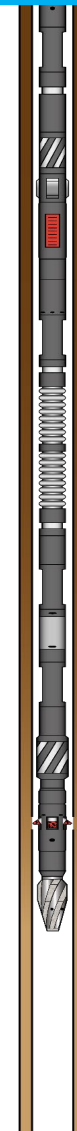
Step 1



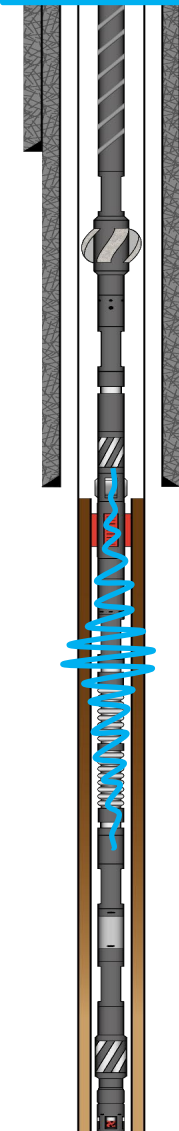
Step 2



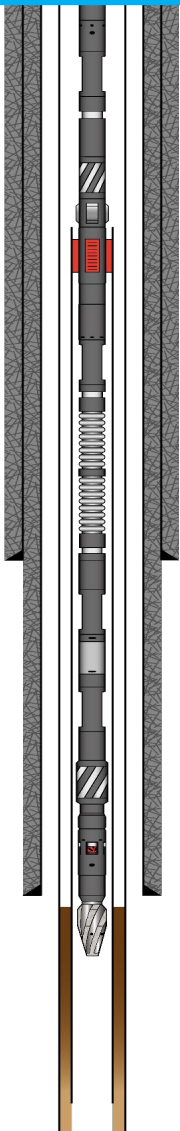
Step 3



Step 4



Step 5



1. RIH and commence clean up with CU Mill to desired depth
2. Engage spear in top of casing, attempt pull with rig
  - Flow through BHA to activate ART – No success
3. Relocate to contingency cut depth – Make cut
4. Pick to top of casing, engage spear – attempt rig pull if no success – activate ART and pull casing free with resonance assist
5. Once casing is free recovery completed with rig

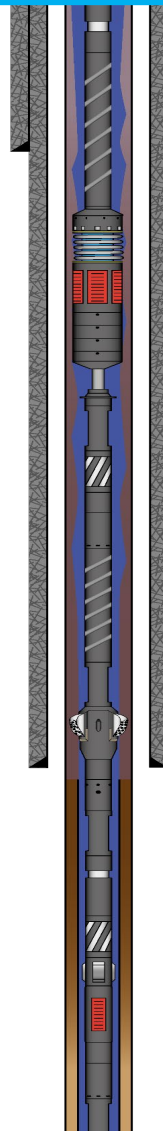
# CLEAN UP, CUT, JACK & RECOVER WITH RESONANCE



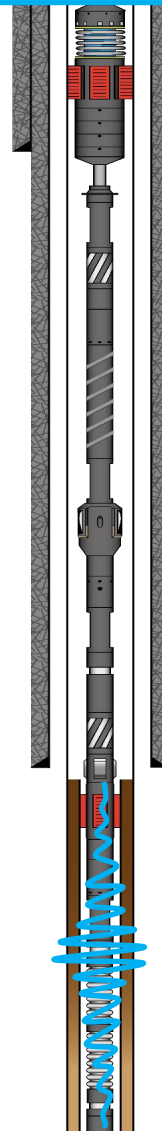
# CLEAN UP, CUT, JACK & RECOVER WITH RESONANCE



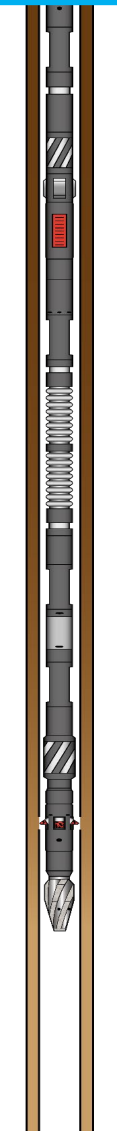
Step 1



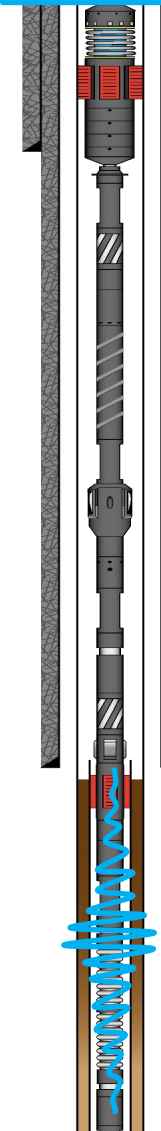
Step 2



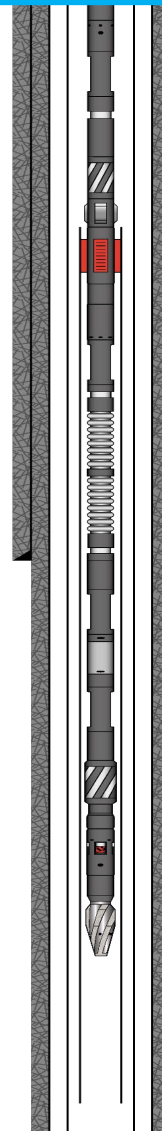
Step 3



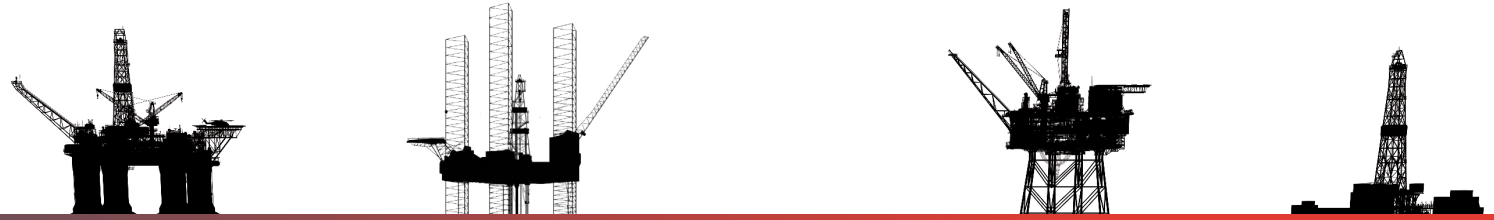
Step 4



Step 5



1. RIH and commence clean up with Underreamer
2. Engage spear in top of casing, attempt pull with rig
  - Engage DHPT – attempt to jack casing free – No success
  - Flow through BHA to activate ART – No success
3. Relocate to contingency cut depth – Make cut
4. Pick to top of casing, engage spear, attempt rig pull
  - Engage DHPT – attempt to jack casing free – No success
  - Activate ART and jack casing free with resonance assist
5. Once casing is free recovery completed with rig



**FASTER. SIMPLER. BETTER.**

RESETTING THE STANDARD IN **WELLS DECOM**