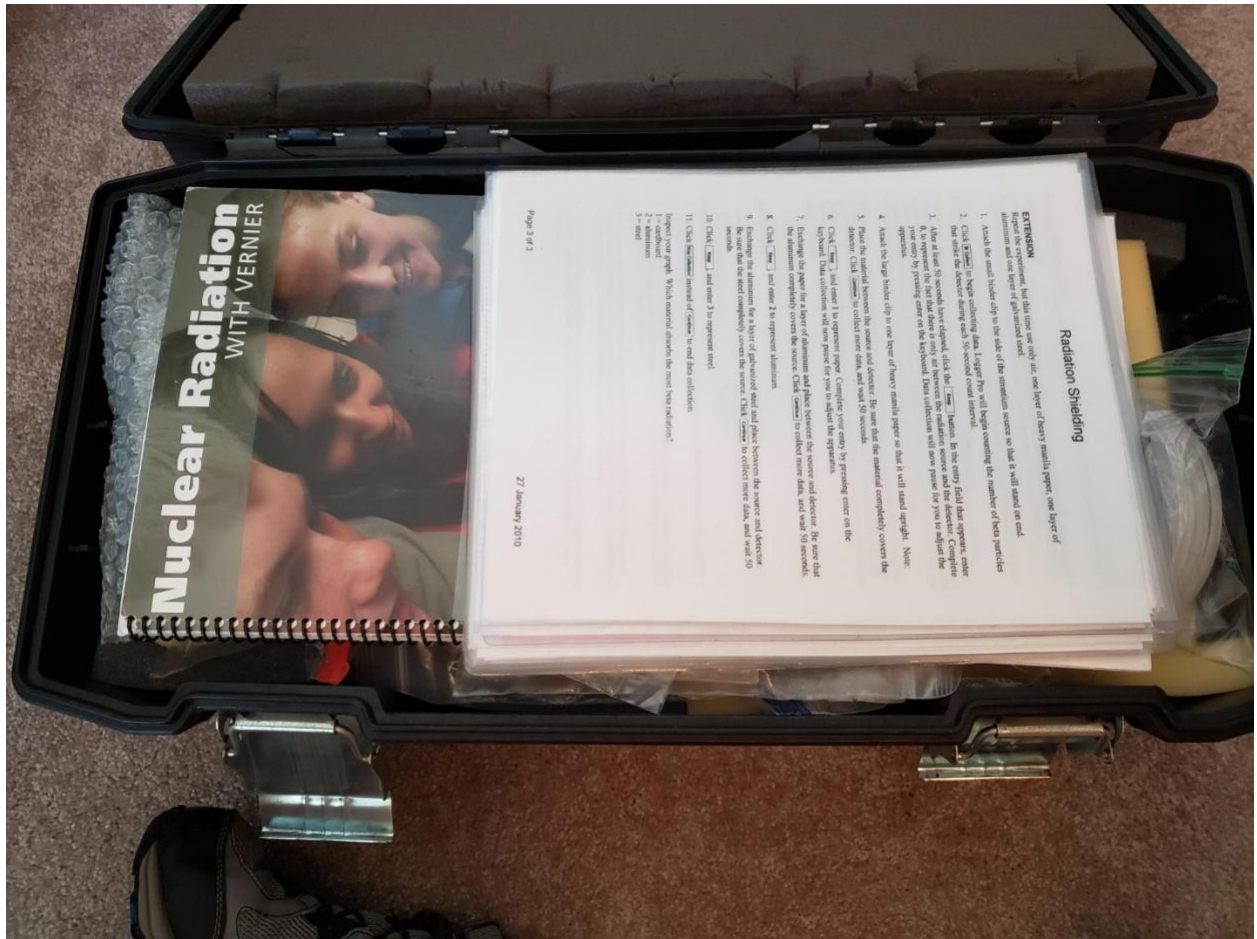


## The HPS Instrumentation Kit –UNPACKING

1. When you receive the KIT, it should look like this:



- After you receive the kit, remove the zip ties, unlatch the latches, and open the cover. Unpack the KIT as follows: Please note that the paperwork is evenly distributed on the top.



Remove the paperwork and you will see this:





Remove Logger Pro Manual and you will see this:



Remove the software CD's and you will see this:



Remove the pack of 4 interface wires. When you repackage this, make sure the wires are spread out like this. Remove the bag containing the elution solution (on the left). Remove the bag containing two of the Vernier interface power supplies (top left). You should now see the picture on the next page:



Remove the lab experiment shielding pieces (in bags) in the center. Two Vernier power supplies are top right. Remove the Jig Parts (2 and 3) for mounting the radiation detector are at (bottom right). The Cs/Ba generator is the blue item under the shield packets. The Cs-137 source storage tube is to the left (it has a white cap and black cap). You should now see the picture on the next page:



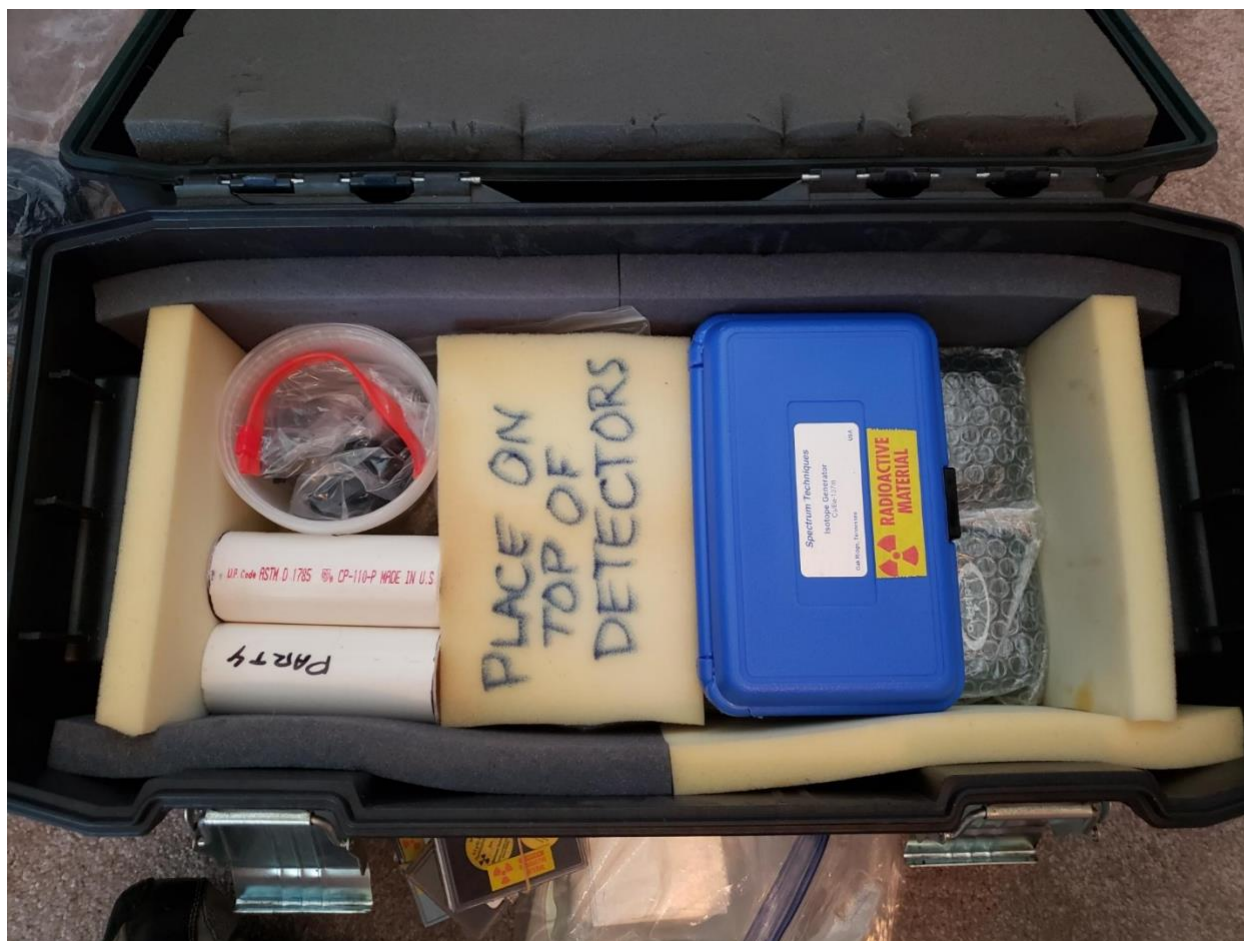


Parts 1 and 4 for the detector Jig are to the left. The source storage tube, 4 sets of Co-60, Sr-90 button sources are next followed by the Cs/Ba generator. Remove the source storage tube and the two Vernier Interface power supplies. You should now see the picture on the next page:



Parts 1 and 4 for the detector Jig are to the left. A bag of large paper clips used for mounting the button sources are inside the stack of 4 Jig Part 1's. The Vernier Interfaces are below the Cs/Ba generator. Remove the 4 plastic boxes containing the Co/Sr sources. You should now see this on the next page:





Remove the piece of detector probe padding and the Cs/Ba generator. You should now see the picture on the next page:

The radiation detectors (4) are in the center. These are stored as shown – alternate wide end to narrow end when restowing later.



Remove the 4 detectors and the bag of large paper clips. You should now see the picture on the next page:



A stack of 4 Jig Part 1's and 4 Jig Part 4's are arranged like this. The Interfaces are arranged like this.  
WHEN YOU REPACK THE BOX, PUT THESE ITEMS IN THE BOX AS SHOWN ABOVE FIRST.

**When continuing to repack the box, follow the reverse order for unpacking starting with the picture above.**



**Don't forget to zip-tie the latches prior to shipping the KIT. The zip ties could be any color; but, when tying them, ensure they go through the holes in the handle latches. The Fed Ex folks can help you, but they will not zip tie the box for you.**



## Radiation detector JIG and Cs source storage tube instructions follow.

### Using the Jig: Detector mounting for liquid Ba-137m sample and source experiment positioning instructions.

Assemble the Jig as shown in these photos. Your LabPro software should be setup and laptop should be turned on. The probe/Vernier interface/laptop and cable connections should be complete. Prior to counting your sample, select the correct detector and open the LIFETIME experiment. Adjust your graph vertical scale top to 5000 and set the bottom to 0. The "COLLECT" button at the top of the screen should be **green**.

Experiment PARTS:

#1 – Plastic bowl.

#2 – Plastic lid.

#3 – Corkboard insert.

#4 – Probe centering sleeve.

Planchet, Vernier interface, radiation detector, Cs/Ba generator, cables – no part #





Separate PARTS 1, 2, and 3.

Snap PART 1 and PART 2 together.





Now put the PART 3 (cork board) below the PART 1/2 assembly and press in. This flattens PART2 and adds stability to the jig. This is your "jig base." Set this aside.



Collect the detector probe and probe centering sleeve (PART 4). Orient the sleeve as shown with the TOP label as shown.



Note the position of the alignment spacers.



**GENTLY** insert the probe into the sleeve and **engage BOTH alignment spacers**. When you do this, you might have to gently twist the probe while inserting it into the sleeve. When you finish, the bottom of this probe/sleeve arrangement should look like this:





ENSURE that the bottom orange band is about 1/8" above the top of the sleeve as shown below:



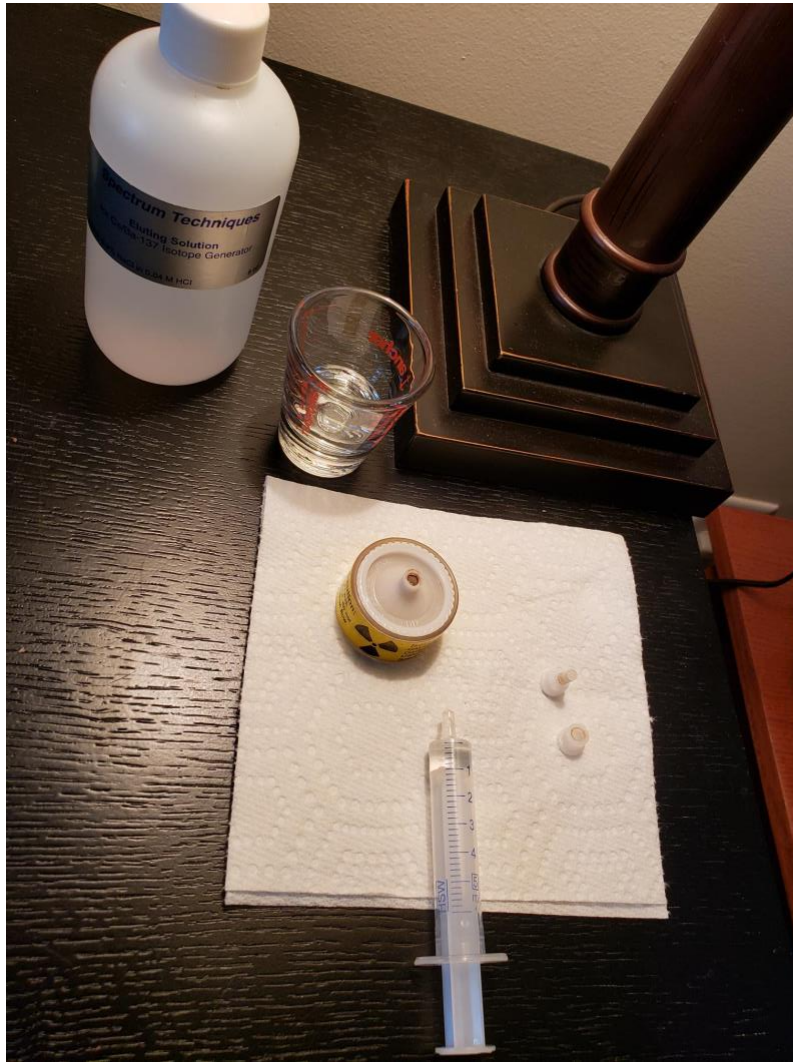
Set this aside and retrieve the assembled jig base.

NOTE: THE JIG/DETECTOR combination here can be used during the radiation and shielding detection experiments. Just lay it down horizontally when using for those experiments. (You might need to use items to keep this from rolling around though).

Place a planchet from the Ba generator kit into the jig base as shown here:



Ready the Cs/Ba generator. Withdraw a small amount of elution solution into the syringe.



Attach the syringe to the CORRECT side port of the generator. This is the slightly larger opening – note that there is a FLOW direction arrow on the GENERATOR. The arrow IS NOT pictured here.



Now, place **4 drops** of the barium solution into the planchet from above. Try to center the drops in the planchet.

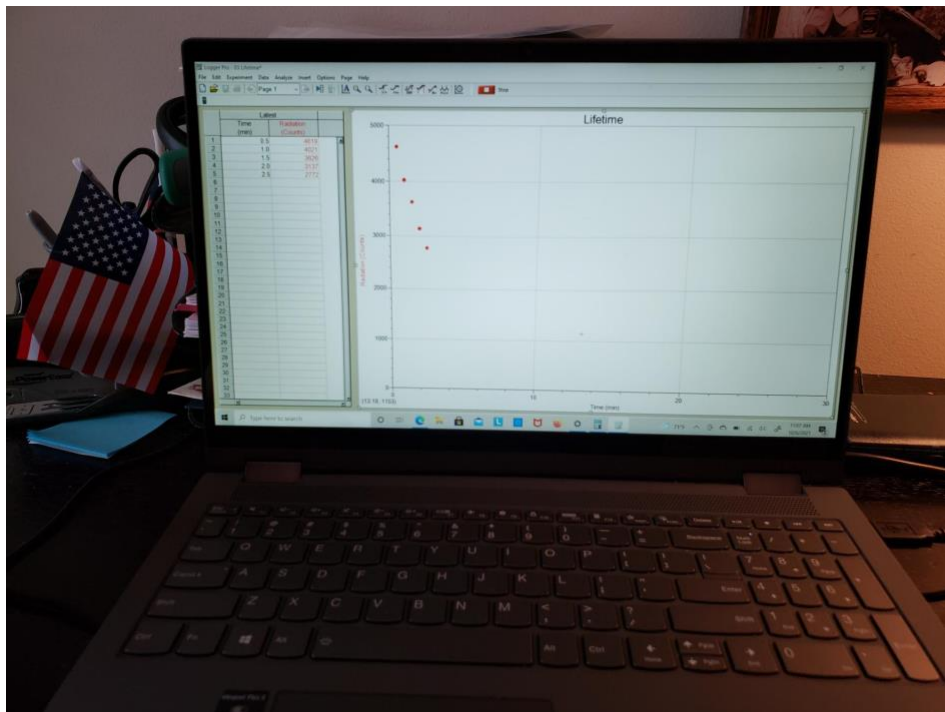




Insert the probe assembly into the jig base and slowly position the bottom end over the planchet until the sleeve touches the jig base.



On the laptop, start the sample count and acquire your data. The counts will be tallied every 30 seconds.



## Source experiment positioning instructions – use for distance and shielding source experiments.

1. Place the detector within Jig piece number 4 as illustrated here:



2. Ensure the top orange line of the detector is flush with the edge of jig piece number 4.
3. Place the jig piece/detector assembly on a horizontal, smooth surface.
4. Obtain a “source clip.” Turn the spring/clamps to face outward.
5. Obtain a button source. Clip the clamp to the button source and ensure the button non-labeled side of the button center faces toward the detector window.
6. Adjust the height of the center of the button (the small dark spot) to the same height as the top silver part of the clamp spring – do not put this small dark spot inside the clamp. This positions the source at about 1 “height. This is the same height as the detector window when it is in jig piece 4.
7. Align the source with the detector (center it).
8. You can now position the source at the specified distance from the detector and/or position shielding pieces between the detector and the source as called for in the experiments.



## Cs Shipping Container components: From left to right

- **Top End Cap** (white) – only tighten one or two threads **DO NOT OVER TIGHTEN!**
- **Source Sleeve Top Cap** (white, locking).
- **Spacer** (aluminum).
- **Top Shield Plug** (Pb, Cu, Al).
- **Cs-137 Sources** (4, 5 uCi each) – place flat against sleeve bottom when returning to source sleeve.
- **Source Sleeve** (plastic).
- **Bottom Shield Plug** (Pb, Cu, Al) – leave in shield tube when retrieving Source sleeve. **Do not remove from shield tube.**
- **Shield Tube** (PVC, Pb, Al).
- **Interior Shock Absorber** (not visible, rubber) – **do not remove from shield tube.**
- **Bottom End Cap** (Black, PVC) – **do not remove from shield tube.**
- If shipping horizontally in KIT box, **make sure the radioactive material sticker is facing UP.**  
This side has added shielding to lower the shipping dose rates.



Disassemble down to the source sleeve and remove button sources for use. Re-assemble in reverse order when you are done.