I. Objectives of Testing

- To assess the increased destructive potential of the new shell design.
- To evaluate the stability of the projectile's flight path.
- To determine any unforeseen risks associated with the enhanced powder charge and casing.
- To establish safe handling and loading procedures.

II. Methodology

A standard 18-pounder cannon was utilized for these trials. A control group of standard solid shot was fired first to establish baseline performance against the target hulk. Subsequently, six experimental shells were fired, each loaded with a precisely measured, enhanced powder charge and fitted with the new, slightly heavier casing designed to fragment upon impact.

Target Range: Approximately 500 yards. Ammunition Tested: * Standard Solid Shot (Control): 3 rounds * Experimental 'Boom-Barrel' Shells: 6 rounds

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III. Results & Observations

A. Destructive Potential (Against Target Hulk)

- **Standard Solid Shot:** Produced clean, round holes upon impact, penetrating the outer planking and causing localized structural damage. As expected.
- **Experimental 'Boom-Barrel' Shells:**
  - Upon impact, these shells did not merely penetrate but *shattered* upon or immediately after initial penetration.
  - The fragmentation caused significantly wider areas of internal damage, creating large, jagged ruptures in the hull timbers.
  - **Observation:** The effect is akin to a smaller, localized explosion *inside* the target ship, rather than a simple piercing. Splintering on the far side of the hull was notably more severe.
  - **Conclusion:** Destructive power is *substantially increased* compared to standard solid shot. Potential for devastating effect on enemy crew and internal structures.

B. Projectile Stability & Trajectory

- **Standard Solid Shot:** Consistent, predictable trajectory.
- **Experimental 'Boom-Barrel' Shells:**
  - Flight path surprisingly stable, comparable to standard shot, despite the altered weight and design.
  - No observed tumbling or deviation during flight.
  - **Conclusion:** Trajectory is acceptable for combat use.

C. Safety & Handling

- **Loading:** Standard loading procedures were followed. No issues observed during the loading process *into the cannon*.
- **Storage:** The shells appear robust in their casing.

- **Risk:** *One shell (Round 4) detonated prematurely in the barrel upon firing, causing minor scorch marks to the cannon muzzle and a louder-than-expected report. Two other shells (Rounds 5 & 6) exhibited slight instability during initial acceleration, though still impacted the target.* This is a concern requiring further investigation.

IV. Recommendations

1. **Deployment:** These "Boom-Barrel" shells should be immediately integrated into our arsenal, prioritizing their use against critical enemy sections (e.g., powder magazines, rudder mechanisms, troop concentrations).
2. **Further Refinement:** Additional work is required to eliminate the risk of premature detonation and improve consistency in shell construction to prevent any in-flight instability.
3. **Handling Protocols:** Emphasize extreme caution in the powder magazine and during loading. Powder Monkeys must be meticulously trained on their safe handling.
4. **Stock Production:** Begin immediate production of these shells to replenish our diminished ammunition stores, prioritizing consistency over speed for safety.

These shells represent a significant advantage, Captain. My cannons are eager to unleash them.