CLASSIFIEDPROPERTY OF THIRD EYE**

Failure #1 Investigation Log (SIDE 1)

TEACHER KEY

This key provides suggested answers, but students might not write about everything mentioned here—or they might have additional ides, which is great!

File	Summary	How did this contribute to the supersuit's failure?
Video	*Monet says that this FireSuit was supposed to protect wearers from fires. But the suit failed and Angelie was burned.*	
Audio Clip 1	*Angelie says she's going to test Singer by setting a fire at the salvage yard.* *Angelie plans to wears Collusia's new fireproof supersuit.*	
Audio Clip 2	*The supersuit (particularly at the elbows, knees, and ankles) did not protect Angelie from the fire.* *Angelie suffered second-degree burns.*	
Firesuit Team Hacked Emails	*Jessica points out that the material used on the joints of the supersuit is stiff and restricts movement. Addison focuses instead on tight deadline.* *Jessica suggests using a more flexible material (graphene) for the joints. Addision says the deadline is too tight and tells Jessica to redesign the suit using graphene—without making a prototype first.*	*Choice of material: Jessica didn't research graphene enough to notice that it is not heat-proof.* *Engineering design process: Addison and Jessica skipped prototyping, a key step in the process.*
Firesuit Logbook	*Lisa Solein rejected a request to extend the deadline.* *The updated supersuit design was used the day after it was made (not tested).*	*Engineering design process: The team skipped prototyping, a key step in the process. Meeting the deadline was considered more important than testing for safety.*
Firesuit Blueprints	*The blueprint shows that first the team chose M5 fiber to make the suit; then they switched to graphene.*	*Choice of materials: The engineers didn't research the materials enough. They chose M5 fiber for its thermal protection without thinking about its flexibility. Then they chose graphene for its better flexibility without thinking about thermal protection.*

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Failure #1 Investigation Log (SIDE 2)

CONCLUSIONS:

What went wrong with choosing the materials for the suit? What could the engineers have used instead?

M5 fiber isn't flexible, while graphene doesn't provide enough thermal protection. The engineers could have considered many other materials, such glass fiber, kevlar, or syntactic foam.

Why did things go wrong? (Think about how the team used the engineering design process.)

The team didn't create any prototypes or do any testing. They didn't research the materials thoroughly enough. They weren't given enough time to do a good job.

What could Third Eye do differently?

Third Eye could make prototypes of their suits and test them to see what improvements are needed. They could research materials more carefully while thinking about everything the suit needs to do. They could recognize that user safety shouldn't be ignored in order meet tight deadlines.