



THE FUNDAMENTALS OF IM TESTING

IMEMTS 2022

JON TOREHEIM

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Industry/Academia: Unclassified
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TIME = \$\$\$

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WHY?

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POLICY: AOP-39

FAST HEATING: AOP-4240

SLOW HEATING: AOP-4382

SYMPATHETIC REACTION: AOP-4396

FRAGMENT IMPACT: AOP-4496

BULLET IMPACT: AOP-4241

SHAPED CHARGE JET: AOP-4526



SRD AOP-39.1

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OK, BUT HOW TO CONDUCT THEM?



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IT IS NOT
THE
METHOD

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IT IS

A

METHOD

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SUITABLE GENERIC TEST EQUIPMENT

A LARGE, FLAT AND UNOBSTRUCTED AREA

VIDEO CAMERAS

HIGH SPEED VIDEO CAMERAS

AIR BLAST PRESSURE GAUGES

DOPPLER RADAR

THERMOCOUPLES

WITNESS PLATES

WEATHER STATION

GPS SYSTEM

DATA ACQUISITION SYSTEMS

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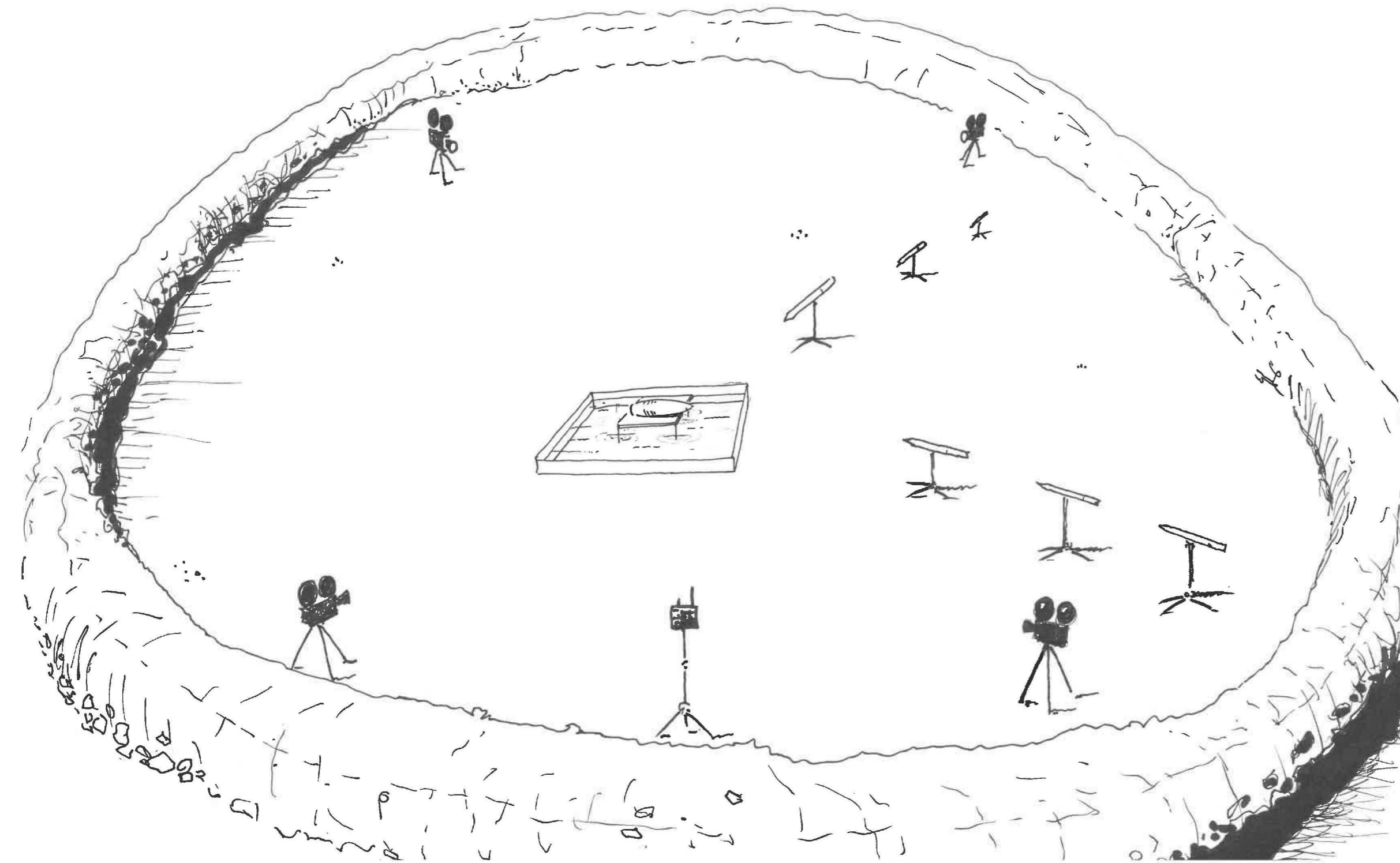
THE LOST SKETCHES



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TEST SETUP; FAST COOK-OFF



HEARTH

JET FUEL (AND WATER) OR
PROPANE

STEEL TABLE

IGNITERS

THERMOCOUPLES

WEATHER STATION

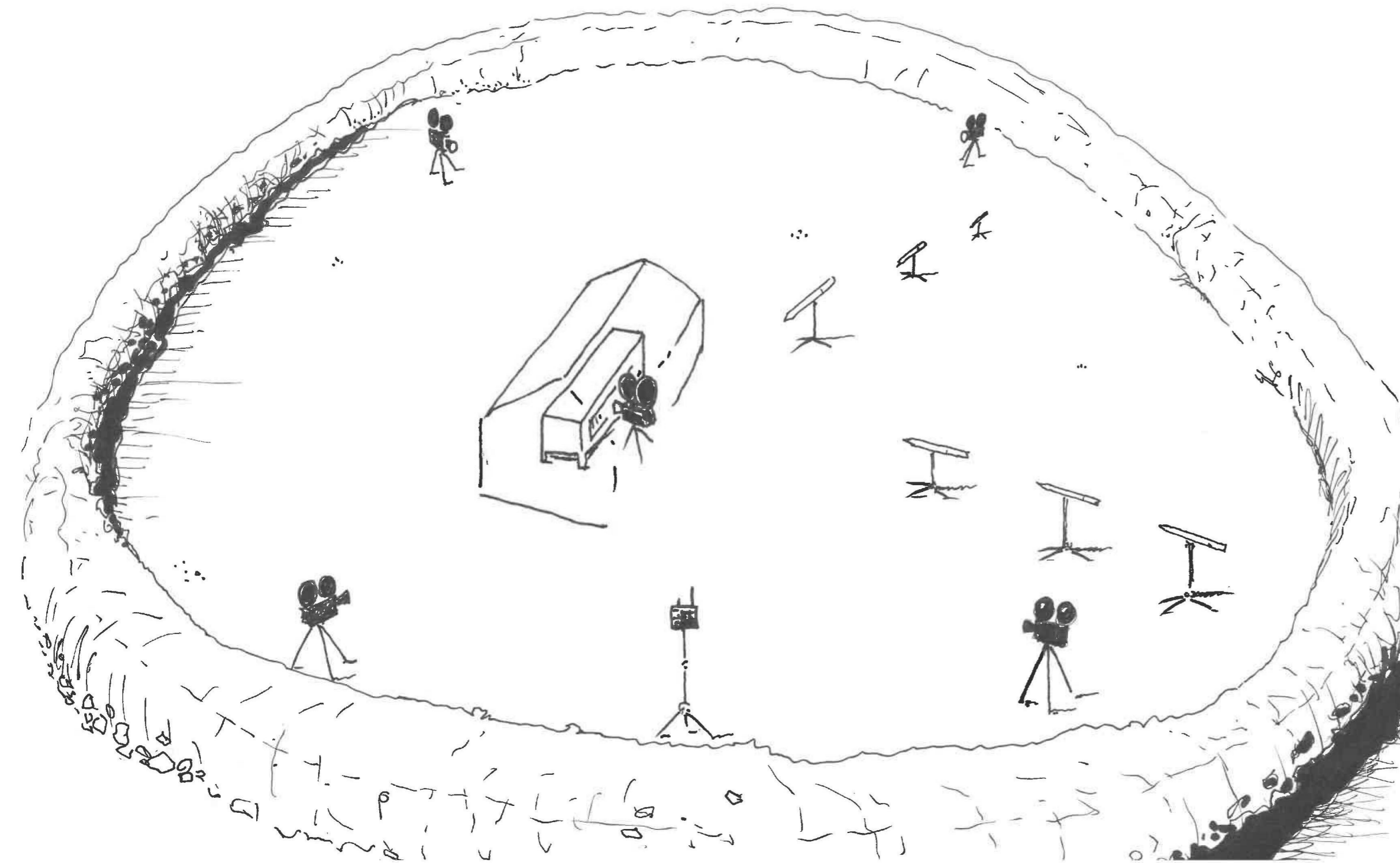
VIDEO CAMERAS

AIR BLAST PRESSURE GAUGES

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TEST SETUP; SLOW COOK-OFF



OVEN

TENT

THERMOCOUPLES

VIDEO CAMERAS

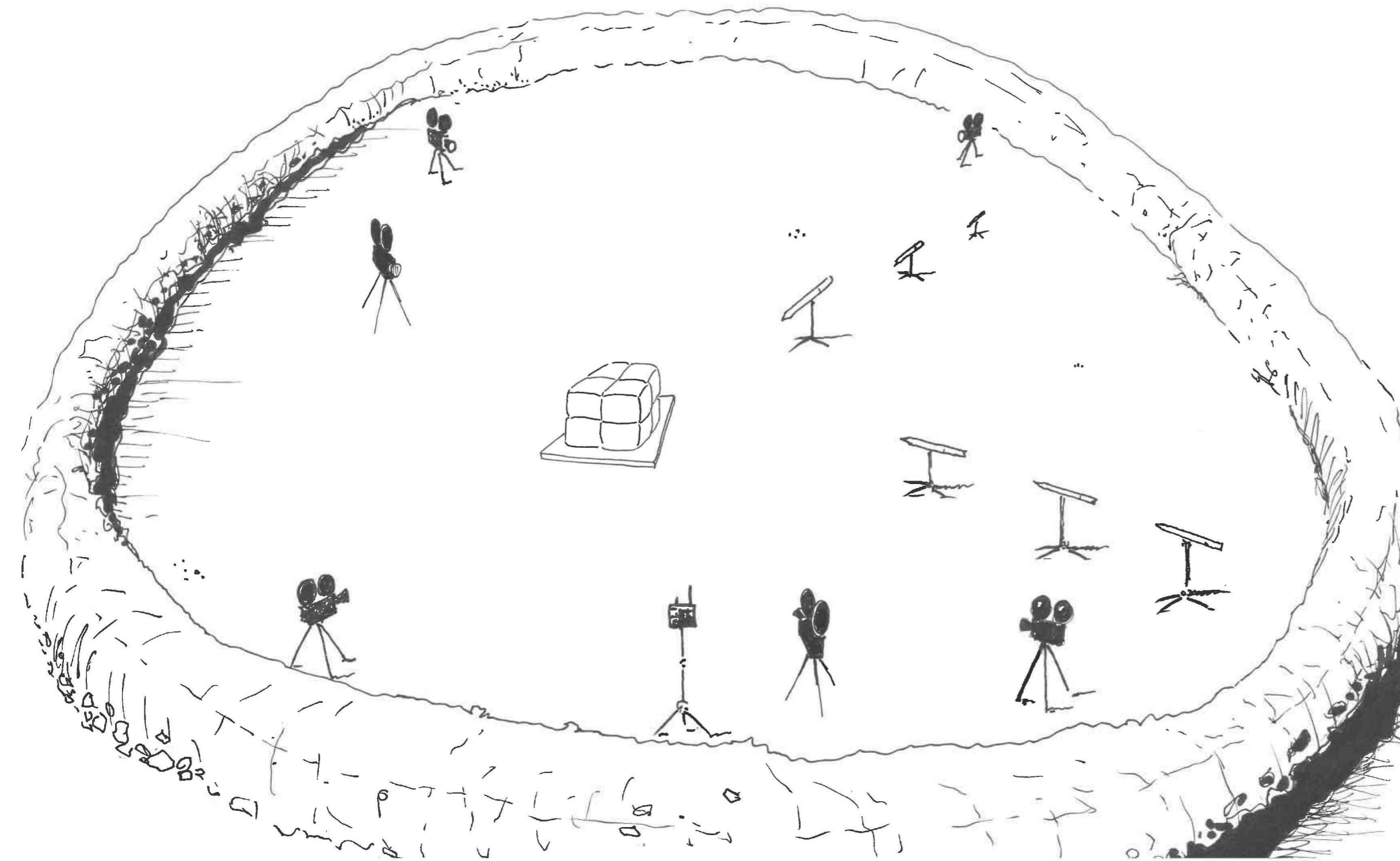
(WEATHER STATION)

(AIR BLAST PRESSURE GAUGES)

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TEST SETUP; SYMPATHETIC REACTION



WITNESS PLATE

HIGH SPEED VIDEO CAMERAS

VIDEO CAMERAS

AIR BLAST PRESSURE GAUGES

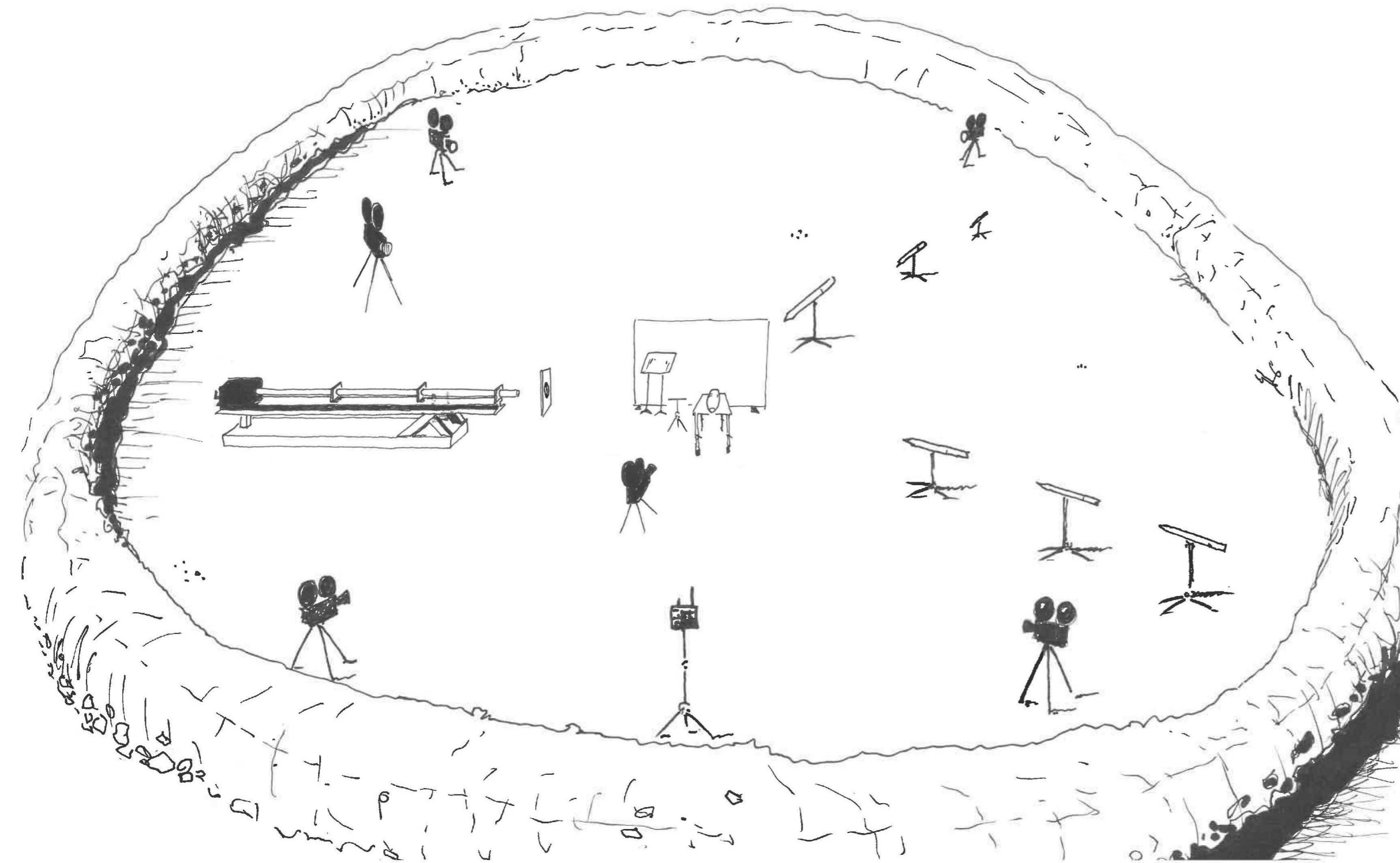
WEATHER STATION

(EXTERNAL CONFINEMENT)

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TEST SETUP; FRAGMENT IMPACT



GUN

SABOT CATCHER PLATE

STEEL TABLE

WITNESS PLATE

MIRRORS

PHOTO BACKGROUND SCREEN

DISTANCE REFERENCE

HIGH SPEED VIDEO CAMERAS

VIDEO CAMERAS

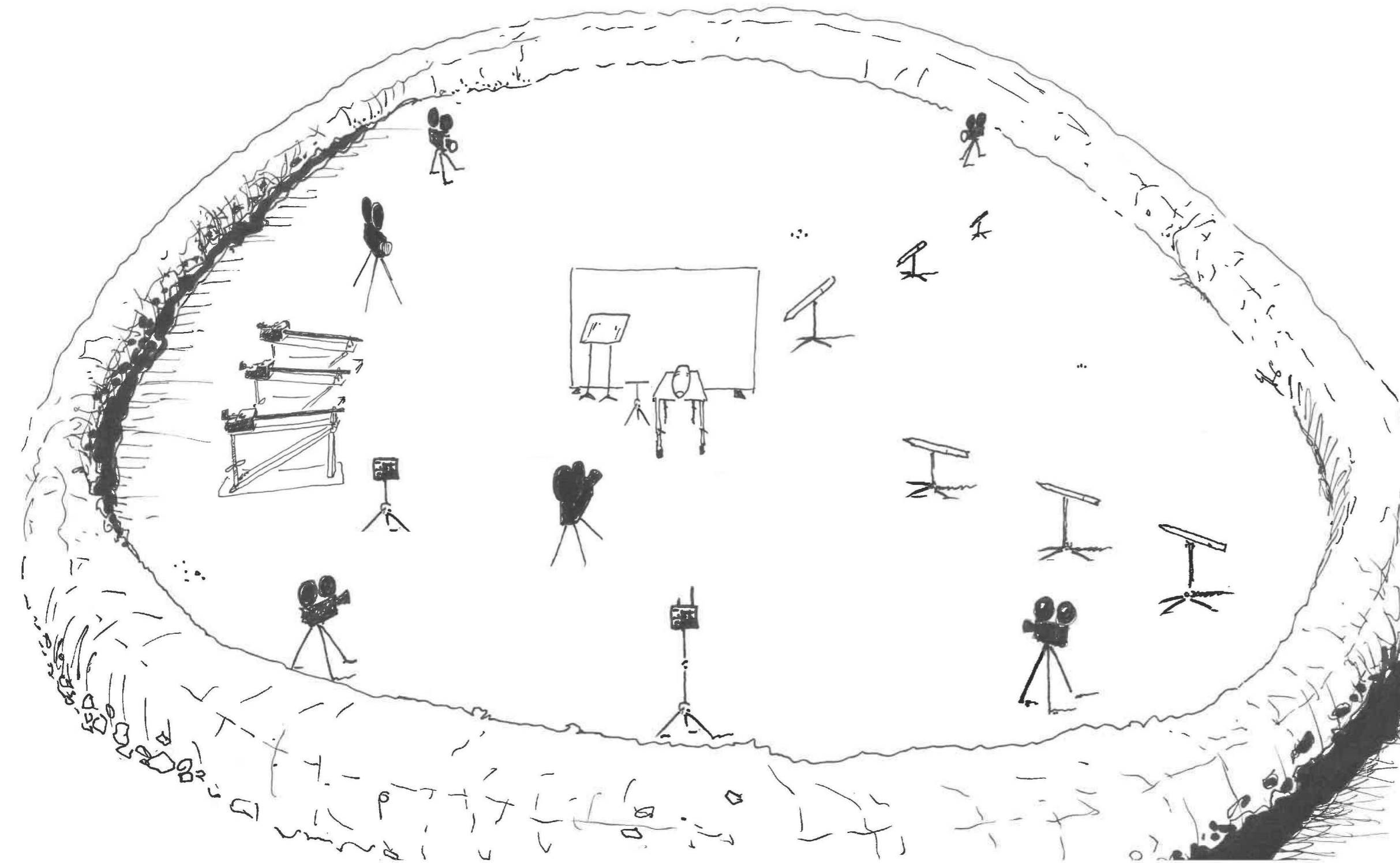
AIR BLAST PRESSURE GAUGES

WEATHER STATION

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TEST SETUP; BULLET IMPACT



GUN(S)

DOPPLER RADAR

STEEL TABLE

WITNESS PLATE

MIRRORS

PHOTO BACKGROUND SCREEN

DISTANCE REFERENCE

HIGH SPEED VIDEO CAMERAS

VIDEO CAMERAS

AIR BLAST PRESSURE GAUGES

WEATHER STATION

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TEST SETUP; SHAPED CHARGE JET



SHAPED CHARGE JET (RPG)

CONDITIONING PLATE

STEEL TABLE

WITNESS PLATE

HIGH SPEED VIDEO CAMERAS

VIDEO CAMERAS

AIR BLAST PRESSURE GAUGES

WEATHER STATION

BOFORS TEST CENTER

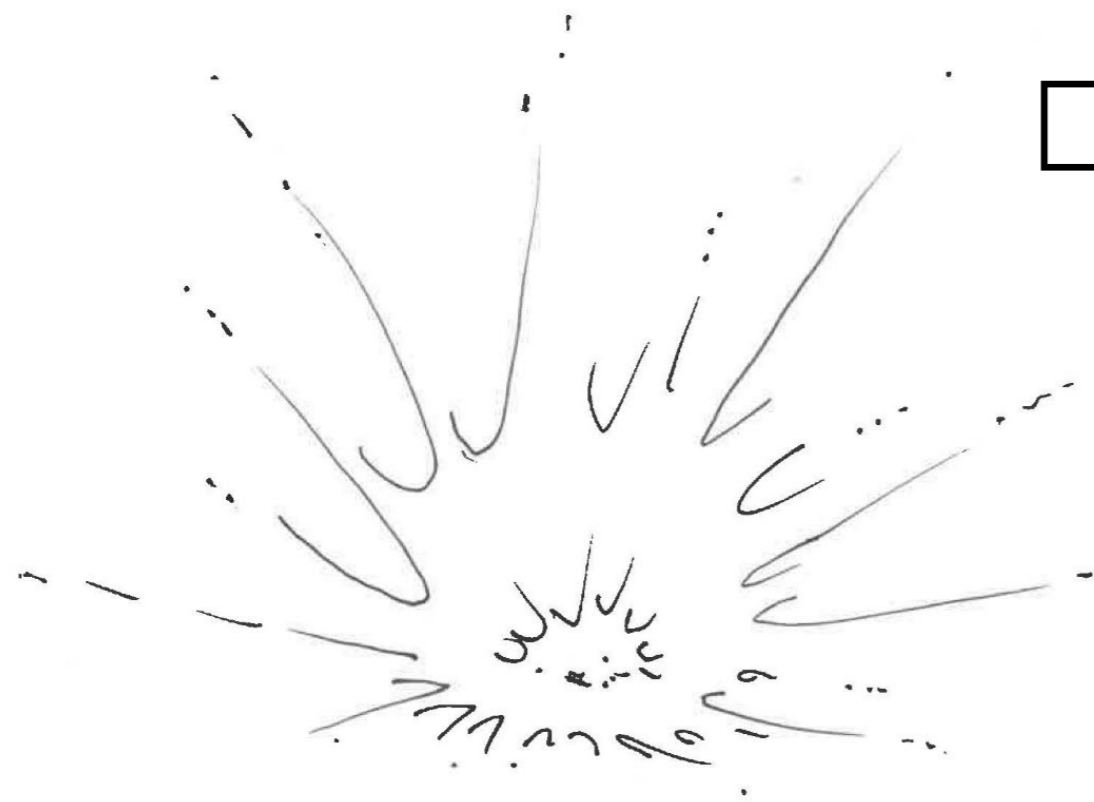
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CONDUCT BASELINE TESTS!

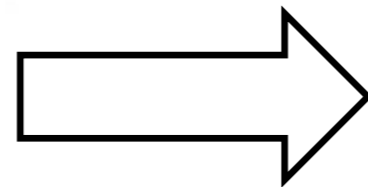
[SRD AOP-39.1]



SHOOT AT AN INERT TEST ITEM



INITIATE A LIVE TEST ITEM TO FULL REACTION



COMPARE:

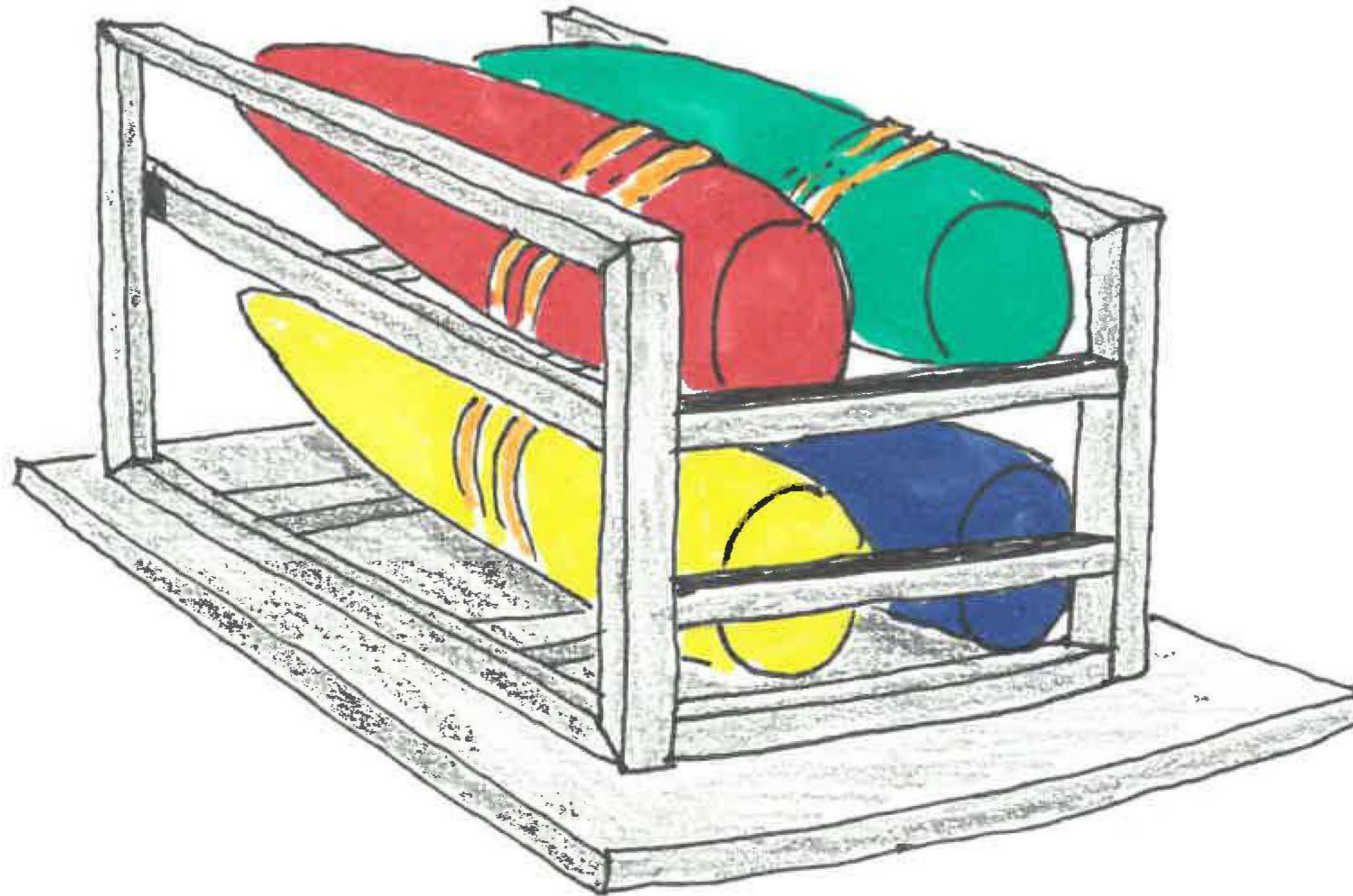
- THE SIZE AND SHAPE OF THE FRAGMENTS
 - THE SCATTERING OF DEBRIS
 - THE AIR BLAST PRESSURES
- WITH THE RESULTS OF YOUR LIVE TESTS

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PAIN_T YOUR TEST ITEMS!

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THE ASSESSMENT

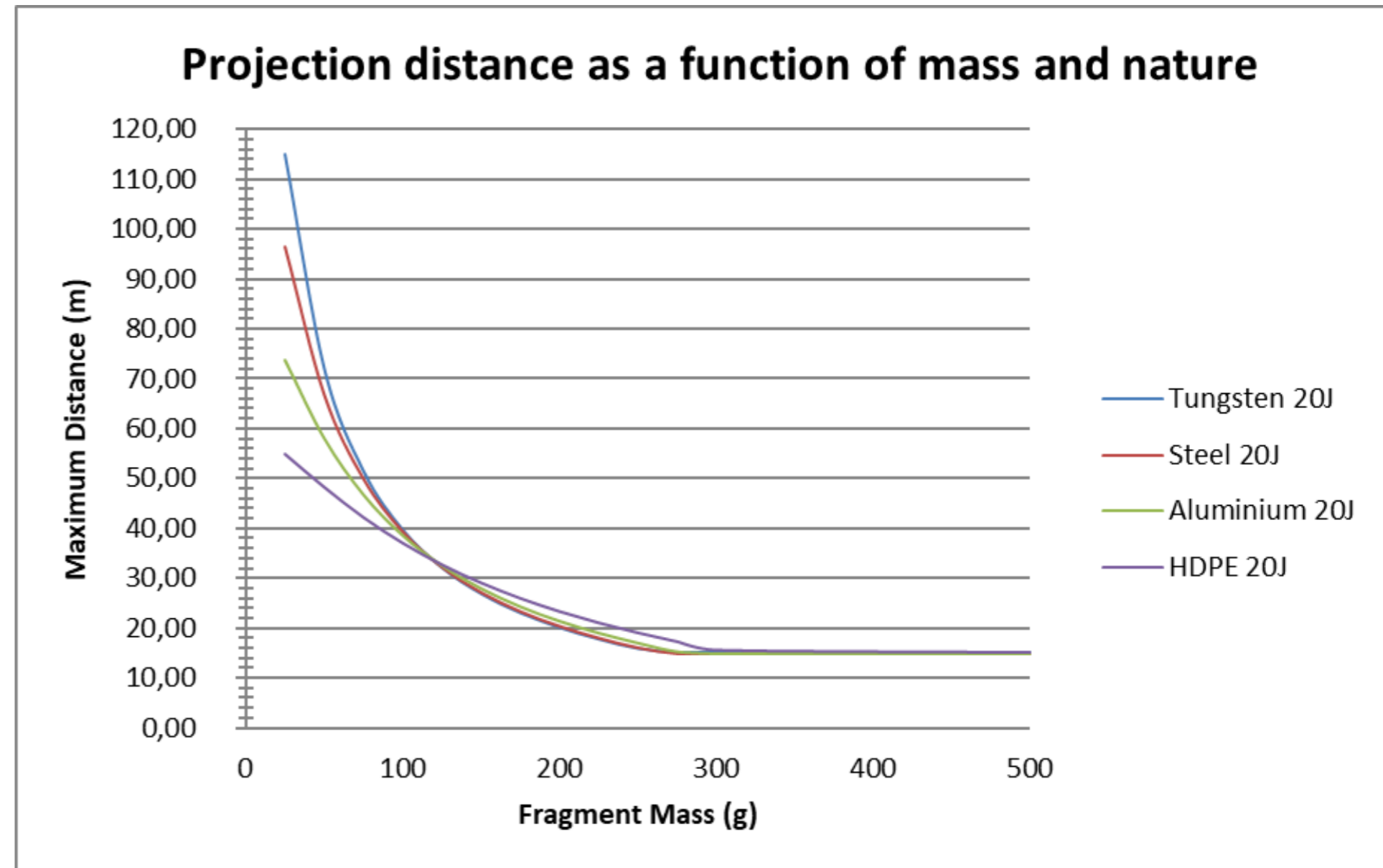
WHAT IS IMPORTANT?

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EVIDENCE

1. FRAGMENTS; SHAPE, SIZE AND DISTRIBUTION
2. WITNESS PLATES; PERFORATION, PLASTIC DEFORMATION
3. ENERGETIC MATERIAL; BURNED OR UNBURNED, DISTRIBUTION
4. PROJECTION DISTANCE
5. AIR BLAST PRESSURES



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ARE INSENSITIVE MUNITIONS WORTH THE EXTRA COSTS AND EFFORTS?



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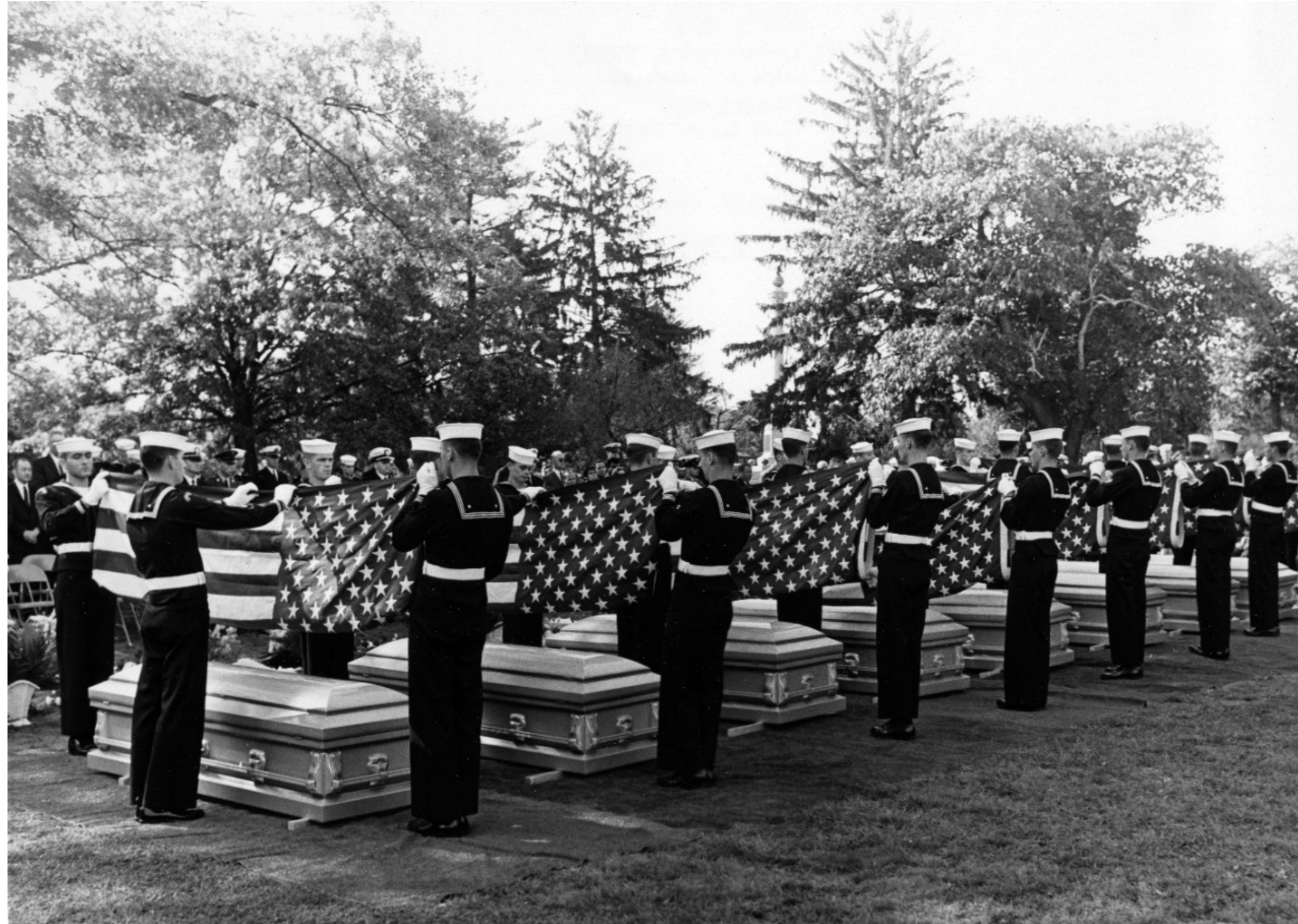


YOU
BET
THEY
ARE!

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OR IS THIS AN ACCEPTABLE ALTERNATIVE?



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ANY QUESTIONS?



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**WELCOME
TO HELL**

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