

**AIRCRAFT FUEL-TANK UHHA
INERTING
USING FIRST-GENERATION
HALON-REPLACEMENT AGENTS**

Sponsored by: THE JOINT TECHNICAL COORDINATING GROUP
ON AIRCRAFT SURVIVABILITY

**WORKING GROUP ON OPTIONS TECHNICAL WORKING CONFERENCE
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OBJECTIVE

- **Determine ullage protection requirements using agents that will be available in the future.**

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TEST PROCEDURES

- **FUEL USED TO GENERATE EXPLOSIVE MIXTURE**
 - **JP-4S @ 3% CONCENTRATION**
 - **JP-4S IS A JP-4 FUEL VAPOR SIMULANT AND CONSISTS OF 15 DIFFERENT HYDROCARBONS**

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TEST PROCEDURES CONT.

FIVE DIFFERENT IGNITION
SOURCE

- 110gr FRAGMENT

- 12.7mm API

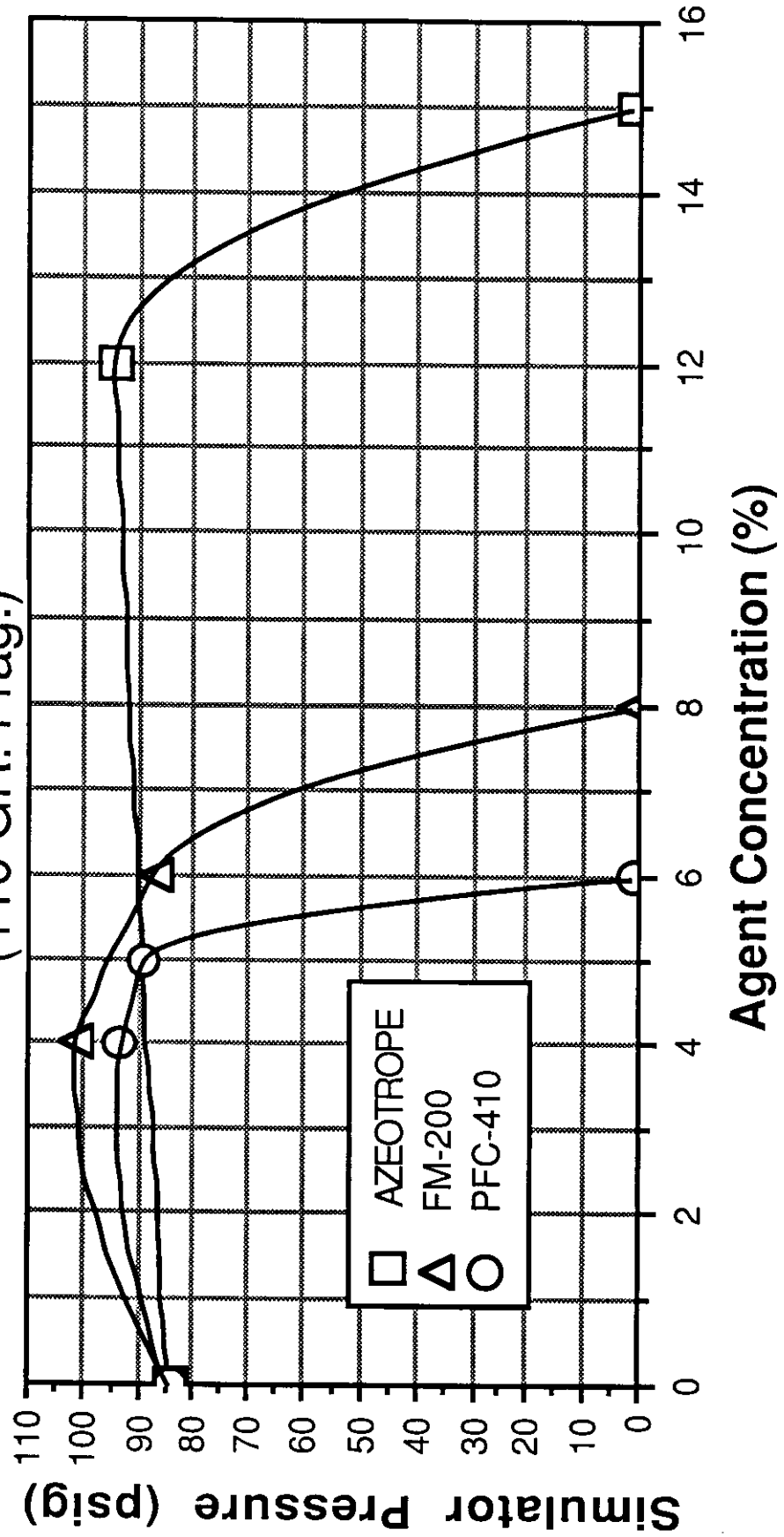
- 23mm HEI

- 30mm HEI

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RESULTS

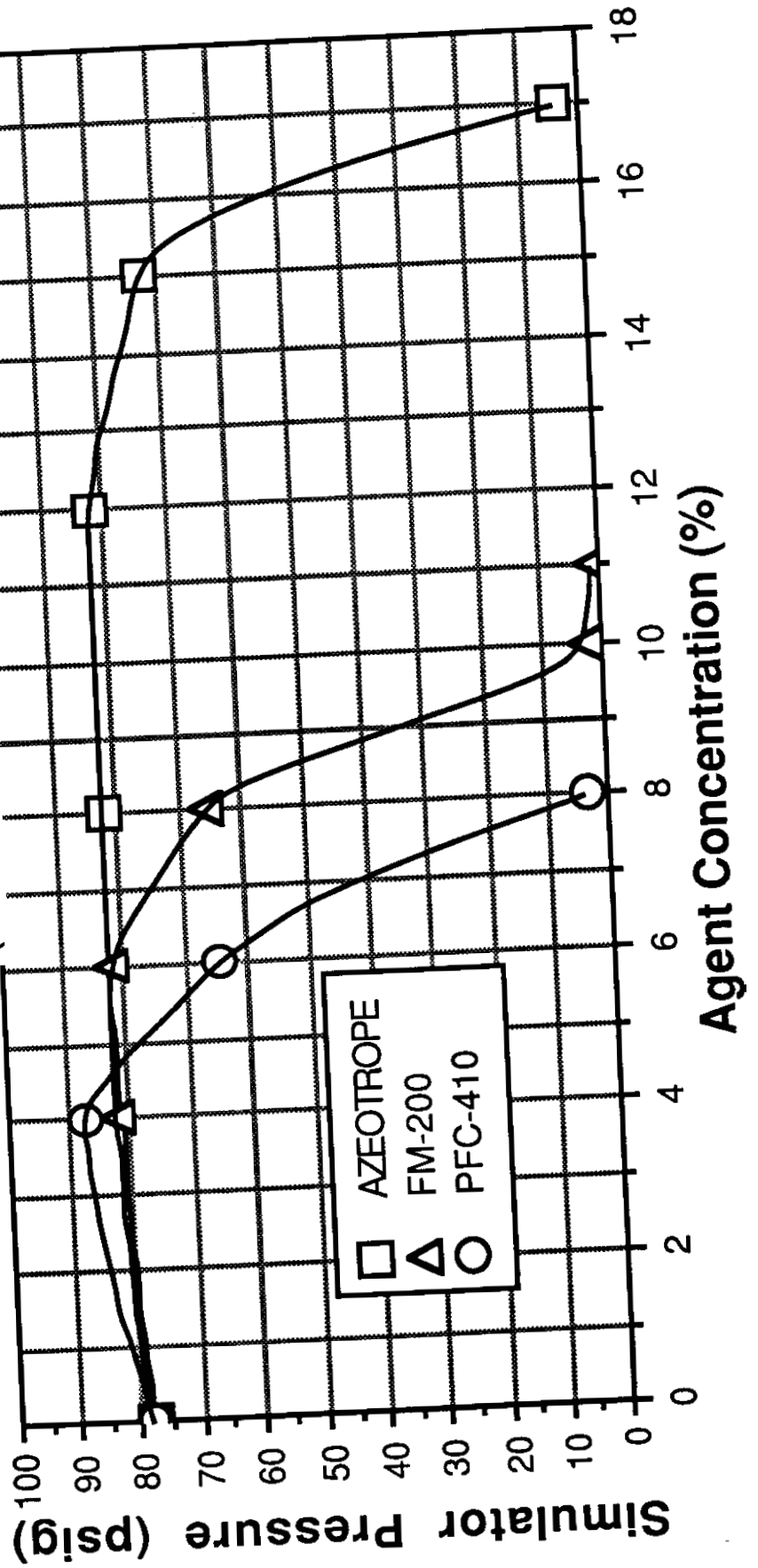
Ullage Explosion Suppression Test
(110 GR. Frag.)



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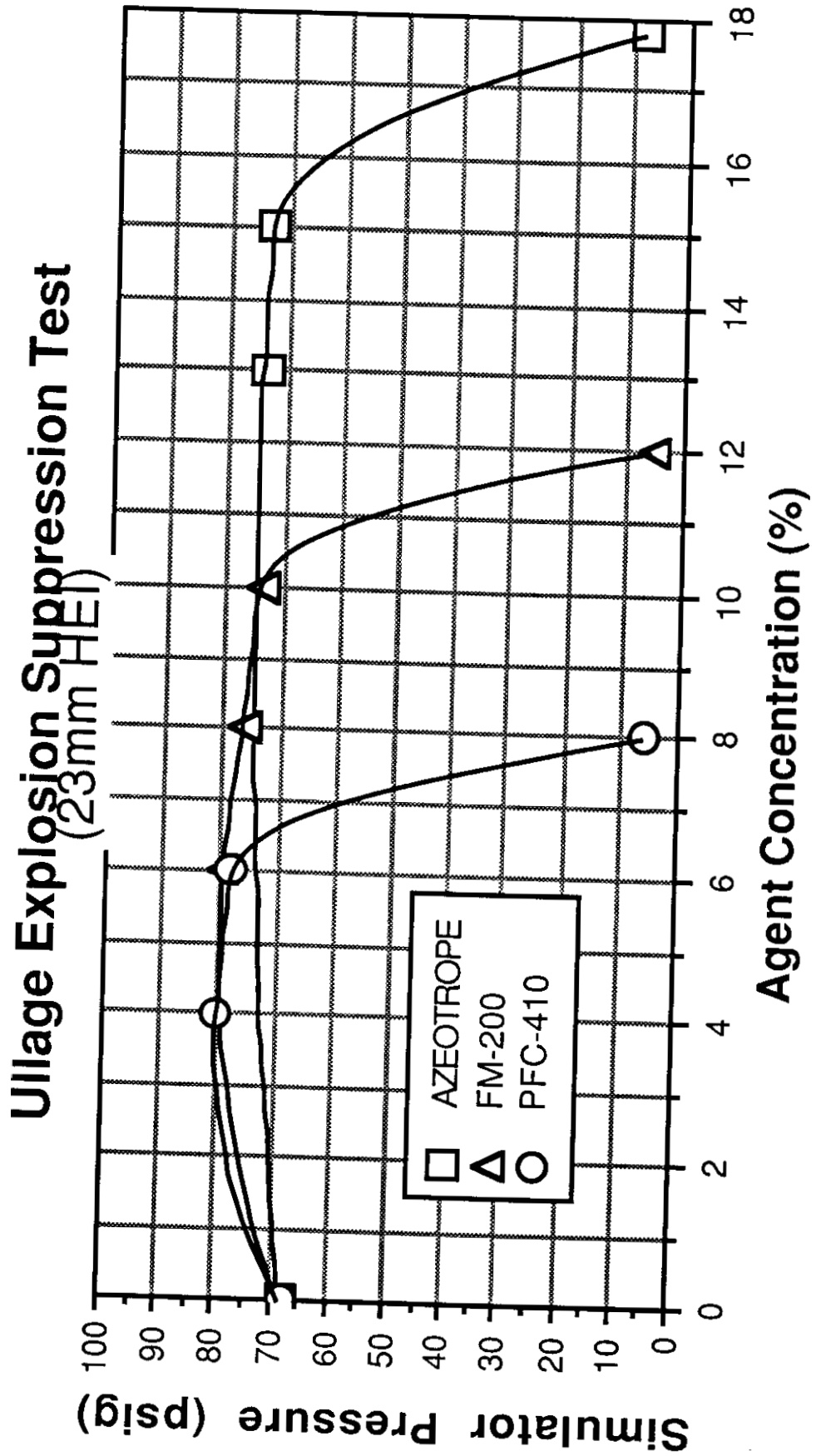
RESULTS CONT.

Ullage Explosion Suppression Test
(12.7mm API)



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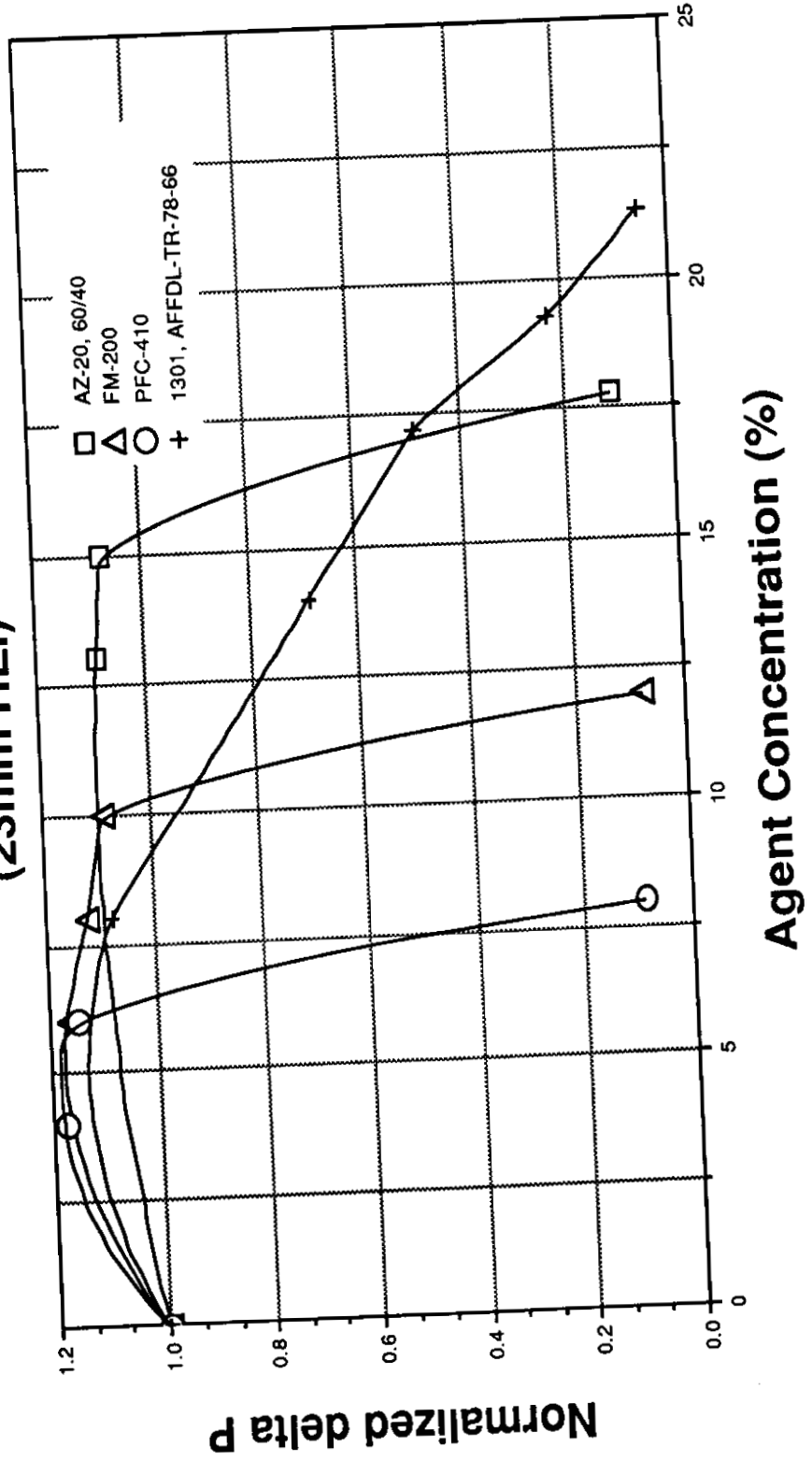
RESULTS CONT.



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COMPARISON TO HALON 1301

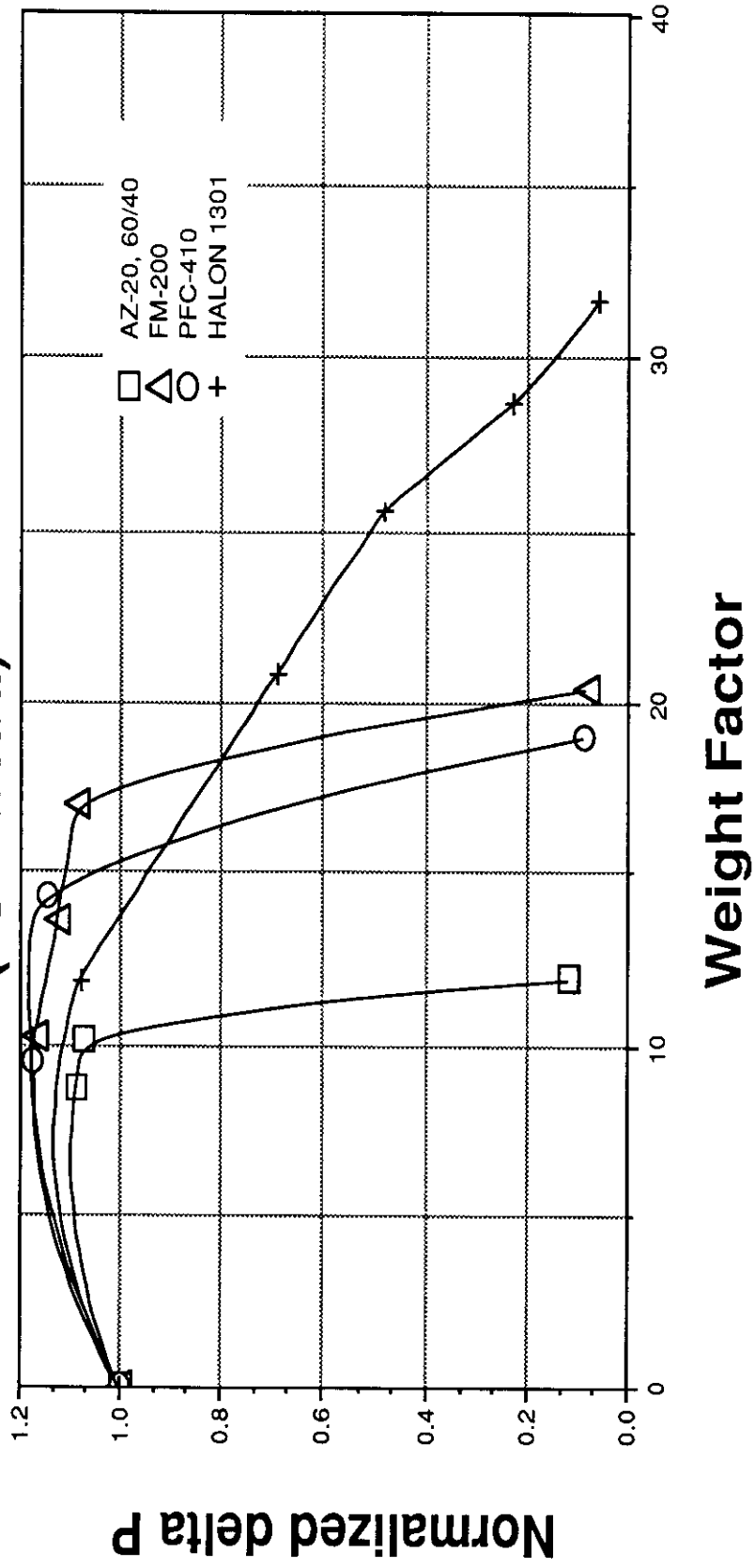
Ullage Explosion Suppression Comparison
(23mm HEI)



AIRCRAFT FUEL-TANK ULLAGE INERTING USING
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COMPARISON CONTINUED

Ullage Explosion Suppression Test
(23mm HEI)



CONCLUSION

- The protection levels have been defined for the four threats presented.
- For the comparison made to Halon 1301 inerting, Halon was not optimum.