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**PROTECTION FACTOR TESTING OF THE BULLARD  
COMPANY POWERED AND SUPPLIED AIR PURIFYING  
RESPIRATOR SYSTEMS**

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## **Disclaimer**

The findings in this report are not to be construed as an official Department of the Army position unless so designated by other authorizing documents.

The work described in this report was authorized under a Testing Service Agreement (TSA) for the U.S. Army Research Development and Engineering Command (RDECOM). The use of either trade or manufacturers' names in this report does not constitute an official endorsement of any commercial products. This report may not be cited for purposes of advertisement.

## Summary

The work described in this report was authorized under a Test Service Agreement (TSA) between the US Army Research Development and Engineering Command (RDECOM) and E.D. Bullard Company. The test was to evaluate the ability of multiple Bullard hood configurations to protect the wearer from aerosolized chemical or airborne biological agents.

The Protection Factor (PF) test used up to 18 different human test subjects. The equipment was expert donned by Protection Factor Test Facility (PFTF) and Bullard personnel. Subjects entered a chamber filled with a corn oil aerosol and performed ten two-minute exercises designed to stress the seal of the equipment. An air sample was pulled from the oral/nasal region of the hood throughout the test. The results of the test are given as a PF, which is the ratio of the concentration of the challenge aerosol outside the hood to the concentration of the challenge aerosol inside the hood. 12 data points were collected for each hood configuration.

All 20 Bullard hood configurations tested between 6-8 June 2012 met the Military PF passing requirement for positive pressure systems for use in a chemical and biological (CB) environment of 88% at the PF ratio of 50,000:1 or greater and 100% at the PF ratio of 10,000:1.

Configuration	Percent Pass at 10,000 (100% Required)	Percent Pass at 50,000 (>88% Required)
Configuration 1: 20TICT Hood with EVAHL PAPR	100%	100%
Configuration 2: 20TICHT Hood with EVAHL PAPR	100%	100%
Configuration 3: RT1T Hood with EVAHL PAPR	100%	100%
Configuration 4: RT3T Hood with EVAHL PAPR	100%	100%
Configuration 5: GRHT Hood with EVAHL PAPR	100%	100%
Configuration 6: 20TICT Hood with EVA PAPR	100%	100%
Configuration 7: 20TICHT Hood with EVA PAPR	100%	100%
Configuration 8: RT1T Hood with EVA PAPR	100%	100%
Configuration 9: RT3T Hood with EVA PAPR	100%	100%
Configuration 10: GRHT Hood with EVA PAPR	100%	100%
Configuration 11: GVX Hood with CT30 Flow Control	100%	100%
Configuration 12: RT1T Hood with F30 Flow Control	100%	100%
Configuration 13: RT1T Hood with CT30 Flow Control	100%	100%
Configuration 14: RT3T Hood with F30 Flow Control	100%	100%
Configuration 15: RT3T Hood with CT30 Flow Control	100%	100%
Configuration 16: 20TICT Hood with F30 Flow Control	100%	100%
Configuration 17: 20TICT Hood with CT30 Flow Control	100%	100%
Configuration 18: 20TICHT Hood with F30 Flow Control	100%	100%
Configuration 19: 20TICHT Hood with CT30 Flow Control	100%	100%
Configuration 20: GRHT Hood with CT30 Flow Control	100%	100%