

INTRINSICALLY SAFE POWER SUPPLIES



Circumstances

Intrinsically Safe power supplies generally supply power to components and cables located in a hazardous zone. The intrinsic safety of such circuits depends on the ability of those cables and components to store energy. Because of this dependence, the capacitance and inductance or inductance/resistance ratio of the circuits are critical factors in determining their safety.

Approved Intrinsically Safe power supplies have conditions and/or recommendations for use. Those conditions and/or recommendations specify capacitance and inductance or inductance/resistance ratio. If these parameters are exceeded, the circuit cannot be considered intrinsically safe, and it may be possible to ignite an explosive mixture of gas. Recent testing has confirmed this.

Action to be taken

Mines are to review ALL installed intrinsically safe circuits and are to ensure that the intrinsically safe power supplies are used in accordance with the approval conditions and/or recommendations.

Mines are further advised to contact the manufacturers of intrinsically safe power supplies and confirm that the parameters specified on the approval documents are such that if tested in accordance with Clause 5.5, Australian Standard AS2380.7, "ELECTRICAL EQUIPMENT WITH EXPLOSIVE ATMOSPHERES – EXPLOSION-PROTECTION TECHNIQUES. Part 7 – INTRINSIC SAFETY i", there would be no ignition of gas in the spark test apparatus.

Guidance on the design and assessment of intrinsically safe circuits and the determination of external parameters is contained in Appendices A and C of Australian Standard AS2380.7, "ELECTRICAL EQUIPMENT FOR EXPLOSIVE ATMOSPHERES – EXPLOSION-PROTECTION TECHNIQUES. Part 7 – INTRINSIC SAFETY i".

For additional information contact Mr Stan Maginnis, Inspector of Electrical Engineering, on (02) 6351 3052.



N. SNEDDON
ASSISTANT DIRECTOR SAFETY OPERATIONS

