

Health and Safety Executive OC 483/16

Field Operations Division

To

FCG Specialist Inspectors (Electrical, Occ Hyg, Fire and Exp, Noise)

ELECTRICAL ISOLATION OF LARGE SMOKE EXTRACTION SYSTEMS

Introduction

1. This OC, which is based on TD Minute TD/1B/T/17/1990, draws attention to a problem of electrical isolation of large smoke extraction systems during maintenance work and the solution adopted.

Background

2. Colt International Ltd had installed a fire/smoke extraction system in a church bell-tower. The system consisted of 4 powerful extraction fans, an electrical distribution system, a control system and the requisite smoke/flame detectors. Electrical isolation facilities were provided at the main control board at ground level.
3. Access to the tower was awkward and restricted. The electrical contractors, who were retained to carry out routine maintenance on the system, wished to provide local electrical isolation facilities at each fan to aid the serviceperson.
4. The system as installed is designed to operate in ambient temperatures of 200 to 300°C and provides an air movement of some 45 cubic metres per second.
5. Colt advise that there are no readily available electrical isolators capable of operating in such conditions, and that there is always the possibility of an isolator being left in the off-position so destroying the integrity of the system.
6. If a person works on one extractor unit with the others in service, there are the problems of noise, being enveloped in smoke, flame or toxic fumes to be considered.
7. The solution adopted was that during routine maintenance, which is for about ½ day per year, all extractor fans should be electrically isolated and locked off, the

local fire-brigade should be informed before work commences, and a remote alarm (audio/visual) should be provided at the extractor fan level to warn the service operator(s) if any smoke/flame detector operates so that they can make ready escape. It is understood that often a lone maintenance person carries out this work.

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ASI headings

Electric(ity): fire: isolation: smoke.