Computer-based scheme-making system of emergency maintenance for failure of oil and gas pipeline

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Abstract

Accident of oil and gas pipeline may result in enormous economic loss, great casualties and severe environmental pollution (Assael and Kakosimos, 2010). In the field of pipeline accident emergency, the Decision Support System (DSS) has been proposed to reduce the loss of an accident (Dey, 2001; Agbenowosi, 2000; Nataraj, 2005). However, their researches are mostly about risk management (Dey, 2001), materials scheduling (Agbenowosi, 2000), theory (Nataraj, 2005) and process of response, which are served for the decision-makers. In fact, though one of the most important steps of emergency response for accident of oil and gas pipeline is maintenance implemented, there is no enough attention paid on the maintenance scheme-making.

The process of emergency maintenance for failure of oil and gas pipeline is very complex, which is different from the conventional maintenance and related to the geographic information around the position of failure, the type of failure and the parameter of pipeline. Fortunately, the process of emergency maintenance for pipeline failure can be modelled, shown as Fig.1.

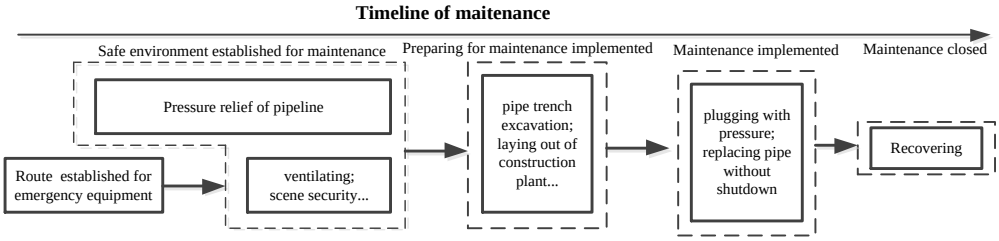

Figure 1. Process of emergency maintenance

Analysing the process of emergency maintenance, the computer-based scheme-making system will be designed by following process, shown in Fig.2. And the scheme can be obtained with several advantages: (1) shorten the emergency time; (2) regulate the maintenance and reduce risk; (3) provide reference for the site commanders.

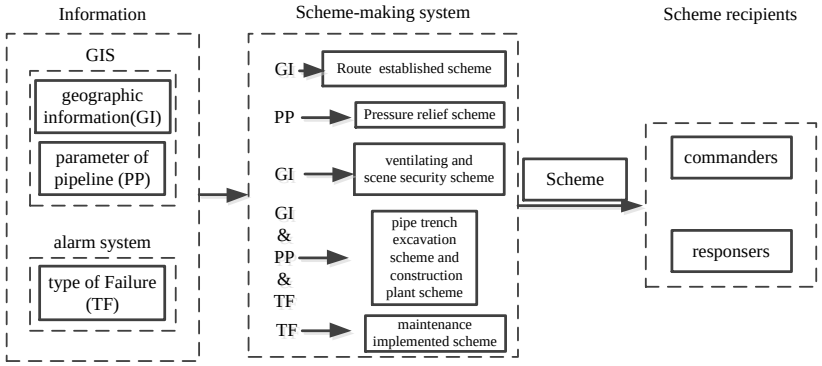

Figure 2. Process diagram of computer-based scheme-making system

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