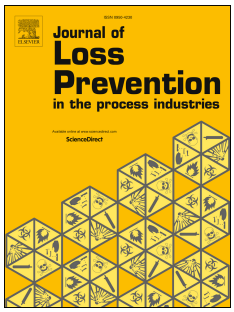
Accepted Manuscript



Modeling an incident management team as a joint cognitive system

Changwon Son, Farzan Sasangohar, S. Camille Peres, Timothy J. Neville, Jukrin Moon, M. Sam Mannan

PII: S0950-4230(18)30328-0

DOI: 10.1016/j.jlp.2018.07.021

Reference: JLPP 3748

To appear in: *Journal of Loss Prevention in the Process Industries*

Received Date: 2 April 2018

Revised Date: 24 July 2018

Accepted Date: 28 July 2018

Please cite this article as: Son, C., Sasangohar, F., Camille Peres, S., Neville, T.J., Moon, J., Sam Mannan, M., Modeling an incident management team as a joint cognitive system, *Journal of Loss Prevention in the Process Industries* (2018), doi: 10.1016/j.jlp.2018.07.021.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

ACCEPTED MANUSCRIPT

Modeling an Incident Management Team as a Joint Cognitive System

Changwon Son[a,c], Farzan Sasangohar[a,b,c*], S. Camille Peres[a,b,c], Timothy J. Neville[b], Jukrin Moon[a], M. Sam Mannan[a,c]

[a] Industrial and Systems Engineering Department, 3131 TAMU, Texas A&M University, College Station, TX 77843-3131, USA
[b] Environmental and Occupational Health Department, Texas A&M University, College Station, TX 77843-1266, USA
[c] Mary Kay O'Connor Process Safety Center, Texas A&M University, College Station, TX 77843-3122, USA

* Corresponding author: Industrial and Systems Engineering Department, Texas A&M University, 3131 TAMU, College Station, TX 778432-3131

E-mail addresses: cson@tamu.edu (C. Son), timothyn019@tamu.edu (T.J. Neville), sasangohar@tamu.edu (F. Sasangohar), peres@tamu.edu (S.C. Peres), jukrin.moon@tamu.edu (J. Moon), mannan@tamu.edu (M.S. Mannan)

ABSTRACT

Resilience is considered an essential capability of an Incident Management Team (IMT) in planning for and responding to disasters and catastrophes. While IMTs have been studied as a decision-making unit, few attempts were made to view them from a Joint Cognitive System (JCS) perspective that highlights the interplay among humans and technical agents and demands imposed by the incident. To that end, this paper presents a JCS model of the IMT grounded in findings from the existing literature and naturalistic observations of simulated IMT's incident action planning, which functions in a cyclic manner across multiple scales. Using this model, three measures for resilience of the IMT, recovery time, resource status, and interactions, are discussed. To effectively represent the resilient performance incorporating these measures, a novel adoption of the Interactive Episode Analysis method is utilized. By providing a few examples of the analysis method, this study provides proof-of-concept for objective assessment of the resilience characteristics of the IMT. The proposed JCS-based IMT model can be used for descriptive modeling of similar systems to investigate resilient performance.

Key words: emergency management, cognitive systems, resilience engineering, disaster response, incident action planning process

1. Introduction

Disasters have persistently challenged societal capabilities of managing risks from technical, natural or civil threats (Jain, Pasman, Waldram, Rogers, & Mannan, 2017; Mendonça, 2007).

Download English Version:

https://daneshyari.com/en/article/11003040

Download Persian Version:

https://daneshyari.com/article/11003040

Daneshyari.com