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METODOLOGIJA ANALIZE RIZIKA ZA SISTEME ZA SNABDEVANJE VODOM ZA PIĆE*

RISK ANALYSIS METHODOLOGY FOR WATER SUPPLY SYSTEMS

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APSTRAKT

Cilj rada je sagledavanje, opredeljivanje i demonstracija metodologije analize rizika za sisteme za snabdevanje vodom za piće. Modeli i procesi nesreća teorije sistema (Leveson, 2004) opredeljeni su kao odgovarajuća metodologija analize bezbednosti (kao antipoda riziku), zasnovani na konceptu teorije sistema, teorije kontrole i elementima kognitivnog inženjeringa. Metodologija je primenjena na slučaj prestanka isporuke vode stanovništvu Užica, kojom se odlikava migracija sistema ka stanju povećanog rizika, pri čemu je sistem u jednom trenutku prešao bezbednu granicu. Krajnji cilj rada je projektovanje i funkcionisanje vodovodnih sistema koji će biti bezbedniji.

Ključne reči: analiza rizika; vodovodni sistemi; donošenje odluka.

ABSTRACT

The paper aims at the understanding, analysis and implementation of the risk analysis methodology for water supply systems. Systems-theoretic accident models and processes (Leveson, 2004) are defined as an adequate safety analysis methodology (as antipode to risk), and based on the concept of control theory and elements of cognitive engineering as well. The methodology has been applied in the case of cessation of water delivery to the population of Užice, which reflects migration of the system to a state of increased risk, where system crossed the safety border at one moment. The ultimate goal of the paper is to improve design procedures and operation of safer water supply systems.

Key words: risk analysis; water supply systems; decision making.

1. UVOD

Cilj rada je sagledavanje, opredeljivanje i demonstracija metodologije analize rizika za sisteme za snabdevanje vodom za piće, vodeći računa o sistemskim zahtevima i karakteristikama vodovodnih sistema, kao doprinos unapređenju donošenja odluka pri upravljanju složenim komunalnim sistemima. Funkcionisanje i upravljanje vodovodnim sistemima mora da bude plansko, da uključi sve zainteresovane strane, da vodi računa o životnom veku infrastrukturnih sredstava, da se zasniva na poznavanju funkcija, performansi i stanja sredstava, kako postojećih tako i ciljnih. Pri tome, rizik koji se razmatra mora biti sveobuhvatan i ukupan, upravljanje sredstvima može da se vrši na odgovarajući način jedino putem upravljanja sistemom kao celinom, dok metodologija analize rizika treba da bude saglasna prirodi sistema koji se razmatra.

1. INTRODUCTION

The objective of the paper is to perceive, determine, and demonstrate a risk analysis methodology for drinking water supply systems, taking into account the system requirements and characteristics of water supply systems, as a contribution to improving decision-making in the management of complex utility systems. The functioning and management of water supply systems has to be planned, to involve all stakeholders, to take into account the lifecycle of infrastructure assets, to be based on the knowledge of asset functions, performance, and conditions, both existing and target ones. Thereby, the risk under consideration has to be comprehensive and total, asset management can be performed in an appropriate manner only through the management of the system as a whole, while the risk analysis methodology should be consistent with the nature of the system under consideration.

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