Analysis of Data and Information Using Specialized Information System on Environment of Yamal Peninsula and Baydaratskaya Bay

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ABSTRACT

The specialized information system on Environment of Yamal Peninsula and Baydaratskaya Bay (hereafter referred to as SIS-Yamal) aimed at implementing the acquisition, accumulation and transformation of environmental data in order to obtain information required for designing constructing and maintaining gas production and transportation facilities. The paper discusses the aspects of the using the subsystem of problem-oriented applications (SPOA) of SYS-Yamal for the analysis of the environmental data and information. Prototype of this subsystem has been created with using GeoInformational System (ArcView GIS 3.0) and application software for statistical calculation and modelling.

KEY WORDS: Data, information system, applied tasks, applications, modelling, data processing, information product

INTRODUCTION

The specialized information system SIS-Yamal is being developed for acquisition, accumulation, modelling and transformation of environmental data in order to obtain the information required to support planning, management and protection-related decisions concerning Bovanenkovo and Kharasavei gas condensate fields (GCF) in the framework of "Yamal", the project of Russian Joint Stock Company (RJSC) “Gasprom” (Odisharia et al., 1997a). The SIS-Yamal should meet the following main purposes:

- systematization and accumulation of the different environmental data using common standards and procedures;
- maintaining and providing access to environmental data;
- efficient use of the accumulated materials.

The SIS-Yamal development is based on the following basic principles (Odisharia et al., 1997b): 1) compositional approach, meaning isolation of structural elements of the system (subsystems, components, blocks) by their application domain and functions; 2) unity of tools, meaning use of unified standards of information, methodology, hardware and software tools; 3) open character of the technology of the data processing within this system.

The SIS-Yamal includes three functional subsystems - archived data bank, integrated data bank and the problem-oriented applications. The aspects of development and practical usage of the subsystem of the problem-oriented applications (SPOA) which plays the important role for developing a flexible, user friendly tools for scientific and practical aims.

BASIC CONCEPT OF SPOA

The development of SPOA is carried out using SIS-Yamal components: methodological, information, linguistic and software-technological components.

The methodological component of SPOA sets specific characters of functioning to solve major tasks of the system. Current version of SPOA was set up to fulfill the following subtasks:

- sampling, viewing and copying of environmental data by different criteria (Access);
- calculation of the sea state characteristics (Hydrodynamics);
- assessment of impact on the marine environment of the ground dumping in the area of transition over Baydaratskaya Bay (Dumping),
- air pollution as result of the gas exploration (Transferring),
- influence of possible accidents on the gas exploration and transportation (Hazard) and other subtasks.

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