

# Psychological support of fly-in/fly-out labour for construction companies working in the Far North

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**Abstract.** This paper discusses the techniques and integrated application of the methods of recruiting and psychological support of the fly-in/fly-out (FIFO) personnel of a construction company who is to work under the extreme conditions of the Far North. It also analyses the changes in the fly-in/fly-out personnel's working efficiency and psycho-functional state when working in the northern regions and suggests recommendations on methods for improving adaptation at various stages of rotational operations.

## 1. Introduction

In the extreme conditions of the Far North, construction companies use a FIFO form of labour, which is a special form of work outside the place of permanent residence of employees.

The FIFO personnel, while they are at the production site, live in camps which are a complex of buildings and structures designed for life support.

In the extreme conditions of the Far North, low temperatures, high humidity, lack of solar radiation, and atmospheric pressure differences adversely affect the human body. All these combined with physical and emotional stress and anthropogenic impact negatively affect the efficiency and functional state of the human body. This phenomenon is known as polar stress syndrome [1-4].

The process of adaptation to FIFO work in the extreme climatic conditions of the Far North is complicated by the intense physical exertions typical of the construction industry personnel, lack of information and increased fatigability, and they quickly cause stress of all functional systems of the body and significantly reduce the personnel's psycho-emotional tolerance.

FIFO daily living is also associated with a long stay in small rooms and a forced social circle. Therefore, the personnel's psychological compatibility, which ensures high performance throughout the shift, plays an important role for a productive and stable activity of the construction company [5-9].

To ensure a stable operation of the construction company in the Extreme North, a top-priority task is to select highly qualified people with the qualities necessary to be productive in extreme conditions. But in addition to the qualifications and experience of the personnel, special attention should be paid to the psychological characteristics of each employee who is going to influence the socio-psychological climate in the team in general [10-14].

Psychological support of the construction company's team during both the selection of candidates and their work will be important as well. This support includes a set of measures that enable to duly identify and correct the mental health, determine the degree and rate of fatigability of each employee in order to maintain an optimal level of efficiency in different periods of professional activity [15].

## 2. Materials and methods

Personnel selection is a complex process of studying the psychological and professional qualities of an employee in order to whether they are fit to perform their duties at a particular workplace, taking into account the relevance of their qualification, major and personal qualities [16, 17].

Various methods are used to successfully select personnel for FIFO construction in the extreme conditions of the Far North. These include traditional selection methods (Table 1) and various types of interviews (Table 2).

**Table 1.** Traditional methods of personnel selection.

Selection method	Purpose of the selection
survey	obtaining necessary information by analyzing the answers to preliminary prepared line of questions
initial interview	conducting a primary selection among a large number of applicants and shortlisting candidates for a vacant position
testing	identifying personal qualities of an applicant which will be required for future efficient work performance
diagnostic personal interview	obtaining information about an applicant, comparing it with the list of requirements
verifying and confirming recommendations	getting unbiased and impartial information about personal and professional qualities of a potential employee
medical examination	determining physical and mental suitability of an employee to perform the assigned work

**Table 2.** The types of interviews with the recruited personnel.

Interviews	Main Feature
Structured interview	Questions are asked in a certain sequence that is not related to the respondent's answers
Stress interview	Questions are provocative
Case interview	A set of questions describing an invented situation

The case interview is the most interesting technique used in the FIFO personnel selection for work in the extreme conditions of the Far North. This technique allows identifying a preferred behaviour pattern of the applicant for the vacant job, and in addition to assessing the professional skills and personal qualities of the interviewed candidate, it helps to determine to which extent the actions of the potential employee in the designed extreme situation will be acceptable to the employer. A case interview of a group of candidates will help to identify a predominant leader, as well as those candidates who are good team players [18, 19].

The simulated situations for case interviews require solutions at a particular point in time, and this significantly reduces the risk of getting a learned answer. Besides, such situations relate directly to the requirements for a vacant job, they are carefully thought through and chosen to uncover specific

qualities of candidates. This technique allows candidates to simultaneously demonstrate professional skills, motivation and responsibility.

When assessing the candidate's actions in the proposed situation, we analyze how this candidate acts taking into account any options which have not been proposed by the candidate. A special focus is put if the candidate, when being explained about the situation, asks clarifying questions and offers several solutions based on them. Competently built situations of a case interview allow checking the candidate's stress tolerance, proneness to conflict, aggressiveness, ability to achieve goals using different ways and being responsible for the result of their work. It also tests the ability to solve problems in the face of a certain time limit. At the same time, it is very important how the candidate interacts with their colleagues, whether the candidate reveals a desire to help or support the employees who turned out to share this situation.

The case interview technique used to select the FIFO personnel for work in the construction company simulated the situations taking into account the specifics of the construction company's operation in the Far North. The practice of using this technique, however, revealed its advantages and disadvantages (see Table 3).

**Table 3.** Advantages and disadvantages of a case interview.

Advantages	Disadvantages
- reveals specific professional knowledge and skills, and their intensity	- time-consuming preparation and carrying out
- defines a pattern of behaviour and personal views (propensity towards conflict, aggressiveness, tendency to redirect responsibility, etc.)	- needs constant updating of the materials (new and actual situations)
- assesses the type of thinking, the response rate, the flexibility of thinking, the ability to analyze and identify the problem, the ability to non-standard approach, etc.	
- reveals moral values and attitudes	- requires a highly qualified case interview specialist to obtain reliable results
- reveals the potential of a candidate	

A case interview is an interesting and effective way of personnel selection, but as it has its advantages and disadvantages, it is necessary to take into account that it should be combined with the traditional types of interviews in order to get a more reliable assessment of a candidate.

An important condition for ensuring the sustainable work of a construction company in the extreme conditions of the Far North is the formation of a benevolent psycho-emotional climate for the FIFO personnel and adherence of the ratio of the members of permanent staff and newcomers. The features of a team formed from the people of close in age often lead to a tendency to isolate within the values of their social circle. A team consisting of people of different ages is more viable since the younger personnel is influenced by the older ones, adopts the professional skills, which positively affects the performance and relationships within such team in general.

### 3. Results

The list of jobs required for FIFO construction in the extreme conditions of the Far North includes both a wide range of positions managing the construction process and positions executing the tasks assigned. Psychological support of the personnel of a construction company during the selection of candidates is based on identifying the professionally important skills and personal qualities of the FIFO builders. Studies in this focus area, conducted in various FIFO groups working in the extreme conditions of the north, show the leading role of formal-dynamic personality traits and motivational features. As for the motivational field, the significant things are a motivation to achieve a successful result, a set to sincerity and adequacy of behaviour in relations with the people around; as for the personality structure, soft-skills, self-control and tolerance are important. At the same time, heightened sentimentality, sensitivity, pronounced selfishness and self-absorption are not encouraged. In the structure of physical qualities and temperament, there must be high speed in various types of motor activity and a high rate of psychomotor behaviour; the professional sphere requires orientation towards the achievement of the final result, material reward and consumption of material goods.

The surveys of the dynamics of self-assessment of the state of the personnel of a FIFO construction company working in the Far North during a 52-day rotation, which were carried out using WAM questionnaires, showed a positive effect of an increase in the activity index values with the moderate emotionality index on their psychoemotional state, depending on the temperament features (Table 4).

**Table 4.** The representative mental states of the employees working in extreme conditions of the Extreme North.

representative mental states of the personnel	attributive symptoms
overstrain	performance levels are dramatically reduced, disrupted change in performance phases are noticed
anxiety	feeling of threat which prevents the formation of adaptive behavior
fear	stereotype of “emergency” behavior (when mind is completely disabled and a person acts irrationally)
panic	manifestation of mass fear in circumstances of real or imagined threat

Studies of the effects of physical and emotional stress as a result of the professional activities of the FIFO personnel working in the Extreme North showed noticeable changes in the functional state of the body [20] which needs to be restored in a short period of rest to keep the necessary level of professional efficiency. First of all, quick recovery will be aided not only by a professional one but also by psychological selection for work. Highly emotional and highly active individuals with (the questionnaire of formal and dynamic qualities of an individual) have got a more pronounced phase of fatigue. Workers with a clear melancholic type, as a rule, resign after the first rotation, and there are no workers of this type among the staff with the term of service of two years and more.

Observing the restoration of the FIFO personnel of the construction company operating in the extreme conditions of the Far North we elucidated the main factors contributing to rapid recovery. One of the most important factors of rapid recovery is the organization of the FIFO personnel's work and

life which provides minimal physiological and psychological effects on the personnel during their rest. To do so, it is necessary to use the achievements of ergonomics and engineering psychology.

The FIFO form of labour organization in the Far North territories demands professionals from many fields. It is advisable to use professiography [8] as well as mathematical and statistical methods to classify the diversity of professions and to distribute the workers rationally.

To do this, we can use various methods and schemes of professiography [21] which take into account classes, kinds and types of work, the activity of worker, aspects of the conditions and subject of labour, and we consider that the “formulae of the profession” by E.A. Klimov [22] modified by V.V. Pchelinova [23] will be optimal for further mathematical analysis.

As a result of the performed classification, the jobs fall into 4 groups (Table 5).

To ensure an optimal professional duty performance and favourable living environment for the FIFO personnel working in the Far North throughout the whole rotation period, it is necessary to provide psychological support for their adaptation which consists of a set of measures. Since living and functioning of FIFO workers is associated with a long stay in the conditions of forced group isolation, it is necessary to reduce the chances of social and psychological issues by means of creating collective microstructures. Ensuring the possibility to regularly communicate with their family members and friends during the rotation will be important too.

**Table 5.** Main activities in the shift team or rotational form of work organization.

Type of activity	Professionally important qualities
work which requires a high degree of independence and decision-making (like chief officers, team leaders, masters, crew foremen, engineers)	Ability to switch attention rapidly, emotional stability, well-developed communication skills and high level of self-discipline, good memory, responsibility, logical thinking, ability to make decisions quickly and clearly express thoughts
outdoor executive labour performance (including car drivers, drivers of bulldozers and excavators, crane operators)	keenness of observation, good physical and mental health, fast and accurate motor reaction, resistance to monotonous work, good visual memory, ability to concentrate and switch attention, endurance, emotional stability.
indoor executive labour performance (for instance, plasterers, metalworkers, electricians)	responsible approach to work, good self-discipline, diligence, purposefulness, strong-mindedness, conscientiousness, accuracy
executive labour of auxiliary service personnel (such as chambermaids, chefs, cooks, cleaners)	balanced and conflict-free behaviour, patience, accuracy, punctuality, stress-resistance, decency

The personnel adaptation effectiveness will be enhanced by the use of the tools and methods of psychological counselling, teaching the personnel self-control skills, by various restoring physiological procedures, methods of psychological relaxation in the camp, which are recommended to apply after the 15th day of the rotation period. Based on the results of the adaptation processes study, the recommended optimal period of rotation is 39 - 43 days.

The main components of psychological support to assist employees' adaptation of a construction company working on a shift team manner in the Extreme North can be identified and summarized as the following:

- monitoring mental health condition of the personnel, the identification of persons who are susceptible to emotional stress;
- measures for the correction of the mental state disorders;
- analysis, prevention of the development of the causes which can trigger inadequate personnel behaviour (fear, panic, reduced motivation, mental fatigue);
- recommendations concerning ways to boost team-spirit and improve the efficiency of group work and activities in the employees' team suggested by the Heads of Departments;
- psychological training of personnel to perform complex professional tasks;
- identification of factors that adversely affect the mental state of the staff;
- recommendations developed for optimizing the socio-psychological climate and interpersonal relations in the team;
- proposals for the prevention of interpersonal conflicts within the team of employees and the overall enhancement of the socio-psychological climate.

#### **4. Discussions**

The system for recruitment and selection of FIFO workers for a construction company operating in the extreme conditions of the Far North should base, primarily, on the level of professional development, physical abilities of the candidates and psychological traits of each individual employee, and should take into consideration the conditions of construction in the extreme temperatures which are as follows:

- dependence of the noticeable part of works on the weather conditions;
- the uniqueness of the majority of the construction objects;
- wide list of the construction operations;
- construction period.

As for the candidates for managing positions, we discovered that here recruitment and selection should not be based on the professional training level and physical fitness only, but they should build primarily on the psychological traits of each candidate to be selected and their business qualities meeting the requirements for the contents of a performed activity and the time of adaptation to the extreme conditions. As a result of the test, four groups of risk have been marked according to the following test criteria:

1. soft-skills;
2. adequate behavior and self-control;
3. level of intellectual development;
4. adaptation to extreme conditions.

It is also reasonable to select the candidates who have certain service record and experience of work in the extreme conditions of the North for these positions.

#### **5. Conclusions**

Psychological support of the FIFO labour of construction companies operating in the Far North is a set of methods and activities aimed to attract highly-qualified human resources, organize a rotation based work and maintain and improve the working teams' efficiency by means of psychological counselling for the personnel. Psychological support of the professional activities in the extreme conditions should be based on attracting highly-qualified psychologists along with the medical and physiological

research and practice. It is necessary to continue studying and employing non-standard methods of personnel selection in practice in order to achieve the most efficient results i.e. personnel with high moral and psychological qualities and professional competencies.

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