

Chapter #3

MOTIVATIONAL POTENTIAL OF THE PERSONNEL IN THE PERIOD OF PREPARING AN INDUSTRIAL ENTERPRISE TO THE DECOMMISSIONING

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ABSTRACT

Knowing characteristics of the motivational potential of the personnel allows an optimal approach to the human resources when dealing with such personnel problems as designing system of stimulation and involving the staff into the labour activity; evaluation of the occupational and personal competencies of the specialists enrolled in the activities going through harsh conditions or lack of information, when state of cognitive dissonance frequently emerges (Sheridan, 1987; Anokhin, 2000; Bodrov, 2006). The existing content, personality and process theories of motivation in psychology and management offer a thorough explanation of the personnel labour behaviour (Madsen, 1959; Locke, 1968; Weiner, 1972; McClelland, 1971, 1987; Milne, 2007; Herzberg, 2003; Ilyin, 2008). At the same time such sphere as the characteristics of the motivational potential of the staff of an industrial enterprise in the period of preparing it to the decommissioning due to depletion of the technological resource remains little-studied. The article contains the results of the studying motivational potential of the personnel in the period of preparing a nuclear power station to the decommissioning. 87% of the employees have taken part in the survey. All the structural departments of the enterprise are represented in the research sample.

Keywords: motivational potential, motivational orientation, profile, personnel, enterprise.

1. INTRODUCTION

Industrial enterprises cease their activity after having depleted their technological resource. The period of decommissioning can last from several months to several years. The management faces the actual tasks of providing effective performance at the stage of decommissioning and maintaining material and human resources for the industry (Kochan & Dyer, 1993; Antonov, Ivanova, & Tumin, 2012).

The period of decommissioning has its own characteristics: the number of the staff needed is decreasing sufficiently; the demand on the specialists in new directions is arising because of the changing the contents of the enterprise activity; the organizational labour conditions are changing and that is why a new system of incentives is introduced.

In order to keep the labour potential the management of the enterprise makes the following offers to the employees: similar vacancies at other enterprises of the same industry; vacancies at the enterprise during the period of its decommissioning; training in other directions of activity being in demand in the industry. The employees, in their turn, have to make their choice concerning their future interaction with the employer.

Some industrial sectors (metallurgy, coal, oil and engineering industry etc.) have a large experience of preparing enterprises to the shutdown. Specially approved and dependable technologies providing safety of the activity are used in those cases (Gorshenin, 2006).

In the new industrial sectors such as the atomic and chemical industries this experience has not been accumulated yet so innovative technologies associated with some degree of risk are applied (Tretiakov, 1993; Polovinko & Makarova, 2006).

Providing interruptive and effective work of the enterprise in such conditions and minimizing risks of arising of unfavourable industrial processes supposed to become possible only due to the human factor. Specialists, possessing not just a high level of professional qualification, but also a certain personality potential are to be involved in the activity. A special feature of such potential is the ability of the employees to keep a high productivity in various conditions of the production: from the current ones, demanding strict following the technological regulations and performing algorithmic operations to the unexpected, requiring instant activation in a situation of uncertainty and revealing the abilities to make right decisions preventing development of an uncontrolled technological process (Makarov & Varshavskiy, 2004). In such situations the role of the human factor becomes crucial in the providing the effective work of the enterprise (Salvendy, 1987; Anokhin, 2000; Bodrov, 2006; Armstrong, 2010; Ng, 2016). Using the knowledge of the labour potential of the personnel appears to be of importance for solving such organizational-managing problems as providing staff recruitment and rotation, designing and implementation the system of incentives and involvement personnel in the production activity (Viteles, 1953; Abramova, 1988; Kibanov, 2016).

The elements of the personal potential are motivational, intellectual, behavioral and communication characteristics (Sheridan, 1987; Leontiev, 2011). Among the leading qualities, regulating work activity, the characteristics of personal motivational sphere are marked out (Likert, 1953; Latham, 2007; Milne, 2007; Odegov, Rudenko, Apenko, & Merko, 2010).

2. BACKGROUND

The issues of work motivation are covered in a large number of works related to the management and industrial engineering, organizational psychology and psychology of labour. The researchers are of the same opinion that in order the top management of an enterprise could make a right decision concerning the kinds of incentives the estimation of individual motivational structure of the employees is important.

The review of available bibliographical sources has shown that in spite of the detailed studying of the problem of staff motivation there are some little-investigated issues concerning formation of labour motives and motivational sphere of the personnel during the period of preparing an enterprise to the decommissioning.

When analyzing publications regarding this subject we have come to the conclusion that nowadays neither the scientific community nor the specialists in the applied psychology have a common point of view on the estimation different aspects of personnel motivational sphere.

When designing the current research we have been guided by the two-factor theory of motivation (Hezberg, Mausner, & Snyderman, 1959; Herzberg, 2003); the conception of work motivation (McClelland, 1971, 1987), the expectancy theory (Vroom, & Deci, 1970; Lunenburg, 2011), the conception of work motives (Ilyin, 2008) and the conception of motivational orientation (c, 2005).

Herzberg's (2003) two-factor theory bases on two large groups of factors, influencing the work of an employee: motivators stimulating intensive work and so-called hygiene factors creating favourable atmosphere in the workplace. The typical motivators are: professional achievements, recognition and success, work engagement, interest in the job and its elements, responsibility, opportunity for career and personal growth etc.

McClelland (1987) defines three types of needs and corresponding motives, which are the explanation constructs for understanding different types of work behaviour: need for achievement, need for affiliation and need for power. According to this theory the effectiveness of the personnel activity in any sphere can be revealed through its motivational structure.

Ilyin (2008) states: "Human behaviour is always "polymotivated", i.e. is conditioned by a large number of reasons" (p. 122).

According to the Vroom's (1970) theory, in order to develop the most effective system of work motivation it is necessary: (1) to design a system of different kinds of work incentives and rewards; (2) to make the system of rewards in particular organization understandable for each employee and (3) to find out the needs of every employee promptly as well as the rewards having the highest importance for each individual.

Studying the motivational sphere of personality, Milman (2005) has marked out two main orientations in its structure: the consuming and the productive. Material motives compose the consuming motivation: work as economical necessity and opportunity to earn money as means of getting some profit of the activity. The basics of the productive activity are the needs focused on the professional development and activity as well as social achievements.

As the publications review shows, many researchers in the sphere of staff management and authors of the psychological theories and conceptions come to the conclusion that for making right decisions concerning the kinds of incentives by the top management it is important to estimate individual motivational structure of the employees.

3. OBJECTIVES, DESIGN, METHODS

3.1. The research aim, design and sample description

The aim of the current research is studying motivational potential of the personnel during the period of preparing an industrial enterprise to its decommissioning.

The object of studying is personnel of an industrial enterprise of the energy complex (nuclear power plant - NPP). The more detailed characteristics of the enterprise and its activity can be found in the previous publication (Sysoeva, Silenko, & Pravnik, 2017).

The research was carried out from 2014 to 2016 and consisted of two stages.

The first stage includes employees' survey, aimed at defining motivational readiness to continuation of the activity. 2250 employees have taken part in the survey. All the structural departments of the enterprise are presented in the survey.

According to the survey results the sample is divided into three groups: (1) employees who are ready to renew the contract with enterprises of the same industry; (2) employees in the decision making process and (3) those who are going to stop their working in the same industry.

The second stage is aimed at the problems connected with defining characteristics of the motivational potential of the employees.

For fulfilling the research tasks the research sample consisted of 270 employees is formed. While forming the sample the principles of randomized sampling and equal

presentation of various staff categories from all main departments of the enterprise are applied.

The qualification structure of the sample is: top managers – 14%, specialists – 54%, maintenance staff – 1.5%, workers – 30.5%. The major part of the employees has a higher education (69.5%) and a secondary technical education (11.5%) and that corresponds to the qualification requirements.

The average age of the staff is 38.3 years. The number of the employees in the age range up to 40 years is 56% of the whole sample. The gender structure is: 88% men and 12% women.

3.2. Research methods

The motivational potential is considered and studied as (1) motivational readiness of the staff to continuation or ceasing working at the enterprises of the industry, (2) structure of motives of labour activity and (3) profile (structure) of personal motivational orientation.

In order to estimate the motivational readiness to the continuation of the activity and leading work motives we have designed a special questionnaire. It includes two groups of questions. The first group consists of the questions aimed at defining motivational readiness of the staff to continuing the activity at the enterprises of the same industry. After estimating the motivational readiness it is possible to mark out three typological groups: (1) employees, demonstrating the intention to renew the contract and continue work relations; (2) employees with no clear attitude to the continuation of the work interaction with the employer and (3) employees who do not plan to conclude a contract for the continuation of the activity.

The second block is based on the ideas of Herzberg et al. (1959) and includes 60 questions aimed at defining the structure of the motives, underlying in the readiness for continuation of the activity. The questionnaire allows defining eight motives regarding inclination to: material wellbeing, recognition by the others, responsibility and independence, dependence on the managers, career, reaching success in job, personal growth (self-development), affiliation.

In order to define the motivational orientation the technique Diagnostics of Personal Motivational Structure of Milman (2005) is applied. According to his conception, motivational scales reflect two main personality orientations: consuming and productive. The technique includes seven motivational scales. For the completeness of diagnostics each of these seven scales is subdivided into four more subscales, defining: whole-life motivation (concerning the whole sphere of life activity); work motivation; “ideal” state of the motive understood by the author as “a level of a drive to act” (Milman, 2005, p. 42); real state of a certain motive. The total index of personal motivational sphere according to the test results consists of 28 scales of motivational profile (some scales can be consolidated). The whole personal motivational picture is reflected in a personal motivational profile representing the correlations between various motivational scales. A character of motivational profile (MP) can be defined according to the profiles typology. That is why after specifying the characteristics of motivational sphere of each testee, his/her motivational profile can be attributed to one of nine following types: progressive (Pr), regressive (Reg), expressive (Exp), impulsive (Imp), flat (Fl) or combined (progressive-expressive – Pr-Exp, progressive-impulsive - Pr-Imp, regressive-impulsive – Reg-Imp and regressive-expressive – Reg-Exp).

The *progressive type* of the motivational profile positively correlates with successful working activity. Most often this type of the MP is met among creative people. At the same time, this kind of profile is typical for a socially-oriented person and that fact can be included into a concept of creative and productive orientation of a person.

The *regressive type* is characterized by a pronounced orientation to consuming motives and their domination over the productive, developing ones.

The *expressive type* is related to self-affirmation in the society, developed ambition, eccentricity, constant rising of aspiration level.

The *impulsive type* is characterized by the fact that it corresponds to the impulsive type of character accentuation (Groisman, 1995).

The *flat type* of motivational profile reflects deficient differentiation of personal motivational hierarchy or its complete absence. All the motives of such structure have almost the same value, and that leads to wider entropy and ambiguity of their realization. It is known from the management theory that flat managing structures have low efficiency when dealing with complex structures (Repkin, 2013).

The obtained data were processed by mathematical and statistical methods using SPSS 17.0 package. The ranking method and the comparative analysis were applied. While collecting data traditional methods were used as well as the internet-technologies (using programs Psychometric Expert 6, SurveyMonkey).

4. THE RESULTS

The first task of the research was defining motivational readiness of the staff to the continuation of the activity and marking out typological groups according to this criterion.

The survey was carried out after the leaders of the industry had made the decision on the decommissioning of the enterprise due to the depletion of the technological resource.

Then the tasks connected with defining characteristics of the motivational potential in every typological group, marked out according to the criterion of readiness to the continuation of the activity at the enterprises of the same industry, were performed. As the characteristics of the motivational potential the leading work motives and features of motivational orientation of the personnel were considered.

4.1. The readiness of the personnel to the continuation of work at the enterprises of the same industry

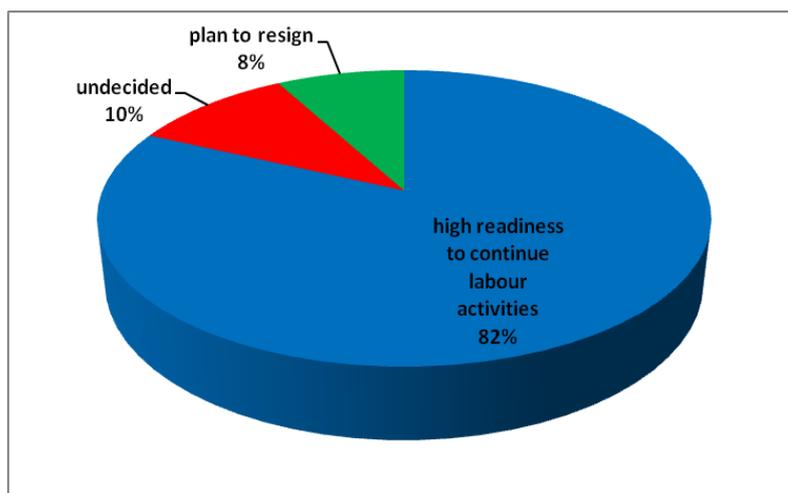
After the survey aimed at defining readiness of the personnel to the continuation of work at the enterprises of the industry and analysis of the obtained results, three groups are marked out in the sample (Figure 1):

Group 1 – the respondents showing the readiness to the continuing cooperation at the enterprises of the industry – 82 %;

Group 2 – the respondents in the decision making process concerning continuation of the cooperation with the employer – 10 %;

Group 3 – the respondents who do not plan continuing working at the enterprises of the industry – 8 %.

Figure. 1.
The results of the survey among the personnel on their readiness to continue labour activities at the plants of the industry.



Let us consider the results regarding the studying of the staff's opinion on the choice of the enterprise at which they would like to continue their labour activity.

The survey shows the 43% of the respondents from the Group 1 (they form the Subgroup A) prefer to continuing working at the enterprise during the period of its shutdown.

22% respondents (they form the Subgroup B) indicate that all variants of the employment in the same industry are suitable for them and they are ready to settle their interests according to the needs of the enterprise. The analysis shows that the special feature of this group is the qualification of its members: they are specialists of high qualification levels and leaders of the linear structures.

It has to be mentioned that the enterprises of the industry are situated in various regions of Russia, differed in climatic characteristics and in the level of the development of social infrastructures. The readiness to the engaging to any enterprise of the industry confirms high mobility of the specialists with high qualification and of the managers of linear departments, which can be interpreted as a favourable factor when solving problems connected with staff rotation.

35% of the respondents (they form the Subgroup C) demonstrate their readiness to continuing labour activity at the enterprises of the industry situated in regions with favourable climate and developed social infrastructure.

Basing on the survey results one can come to the conclusion that the major part of the employees are willing to continue their work activity at the enterprises of the industry, but there is a difference in the attitudes towards the relationship with the employer.

4.2. Motivational potential of the employees, demonstrated the intention to continue working at the enterprises of the industry

Let us consider the analysis of the results of the survey aimed at defining the structure of leading work motives and motivational orientation of the personnel in the moment when the employees were to make a decision on the choice of the future employment because of the shutdown of the enterprise.

The procedure of the data collecting and the results of the primary processing are described in details in the pervious publications (Sysoeva et al., 2017).

Mathematical and statistical processing consists of carrying out factor analysis which allows marking out of the sixty parameters being investigated eight the most important: guaranteed employment at the enterprises of the industry in the period after the completion of the contract with the enterprise to be shutdown; transfer to the structural departments of the management company or getting a higher position at the same enterprise (promotion); opportunity to extend professional competences and getting experience in new directions; employer's financing employees' education (getting a higher educational degree or higher education) or of employees' children education; sufficient salary increase and extra payment during the contract period (material incentives); contribution of the enterprise to the purchase of the accommodation for employees (co-financing); social package; affiliation to the organization having leading positions in the world energy market.

After using Milman's technique Diagnostics of Personal Motivational Structure personal motivational profiles reflecting motivational orientation for each testee are compiled (Table 1).

*Table 1.
The distribution of motivational profiles in the groups with different attitudes towards continuing work at the enterprises of the same industry.*

The distribution of motivational profiles in the groups with different attitudes towards continuing work at the enterprises of the same industry, %	Subgroup A (motivation at continuing the activity at the enterprise during the period of decommissioning)	Subgroup B (readiness to transfer to any enterprise of the same industry)	Subgroup C (readiness to continuing the activity at the enterprises situated in the central region of the country)
Pr	30.5	45.0	15.6
Reg	12.6	8.1	24.7
Ex	14.7	14.2	15.6
Reg	6.2	6.2	5.2
Imp	1.2	0	2.5
Pr-Exp	14.7	14.2	9.1
Pr-Imp	4.2	4.1	5.2
Reg-Imp	7.4	4.1	7.8
Reg-Exp	8.5	4.1	14.3

Let us consider the characteristics of the motivational potential in each subgroup.

The results of the Subgroup A.

In the subgroup A following motives of the labour activity are marked out: (1) guaranteed employment; (2) job promotion; (3) material stimulation of labour activity (salary increase and extra payment); (4) development and improvement of professional competences; (5) affiliation to the leading company; (6) financing employees' education by

the employer; (7) contribution of the enterprise to the purchase of accommodation for the employees; (8) social package. The data are presented according to the order of rank significance.

The Table 1 shows that in the Subgroup A three types of motivational profiles dominate: progressive, expressive and progressive-expressive.

In the Subgroup B a single type of motivational profile tends to dominate – the progressive one. This fact demonstrates the pronounced orientation to the professional development and inclination to achieve mastership in the activity, a high degree of involvement into activity and its development (Table 1).

The following work motives in the Subgroup B can be marked out (in order of rank significance): (1) development and improvement of professional competences; (2) job promotion; (3) guaranteed employment; (4) affiliation to the leading company; (5) material stimulation of the work activity; (6) financing employees' education by the employer; (7) contribution of the enterprise to the purchase of accommodation for the employees (co-financing); (8) social package.

In the Subgroup C the regressive and regressive-expressive types of motivational profile have the higher frequency (Table 1).

The intensity of work motives in the Subgroup C (in order of rank significance): (1) guaranteed employment; (2) job promotion; (3) material stimulation of the working activity (salary increase and extra payments); (4) contribution of the enterprise to the employees' accommodation purchase; (5) social package; (6) financing employees' education by the employer; (7) development and improvement of professional competences; (8) affiliation to the leading company.

Summarizing the obtained results, we can come to the conclusion that the major part of the employees with a positive attitude towards continuation of work at the enterprises of the industry has the following leading motives: inclination to professional development, promotion and appreciation in the professional environment, orientation to the worthy salary and high degree of organizational identity.

4.3. Motivational potential of the employees who are in the decision making process concerning continuation their activity while taking part in the survey

The second group (10%) consists of the respondents who mention they have not come to the conclusion whether to renew a contract for the continuing activity in the same industry or to resign and to search for a new employment on their own.

The following distribution of the motivational profiles characterizing motivational orientation is found out in this group: progressive – 9.1%, regressive – 27.3%, expressive – 9.1%, impulsive – 13.7%, flat – 4.5%, progressive-expressive – 4.5%, progressive-impulsive – 9.1%, regressive-impulsive – 22.7% and regressive-expressive – 0%). The tendency to domination of regressive and regressive-impulsive types is pronounced.

After having ranked the leading motives in this group the following structure can be seen (1) material stimulation of the working activity; (2) affiliation to the leading company; (3) guaranteed employment; (4) job promotion; (5) social package; (6) contribution of the enterprise to the employees' accommodation purchase (co-financing); (7) financing employees' education by the employer; (8) development and improvement of professional competences.

Summarizing the results we can come to the conclusion that in the group of the respondents who has not made a decision of their future employment the consuming motives prevail over the productive ones and in the personal profile such features as impulsiveness and egocentricity can be found.

4.4. Motivational potential of the employees who do not plan to continue working for the same industry

The third subgroup (8% of the sample) consists of the employees who mention that they do not plan to continue working at the enterprises of the same industry and they have their own plan of a future employment. The following distribution of the motivational profiles, marked out by a Milman's technique, can be seen: progressive – 5.6%, regressive – 11.1%, expressive – 5.6%, impulsive – 11.1%, flat – 0%, progressive-expressive – 5.6%, progressive-impulsive – 27.7%, regressive-impulsive – 27.7% and regressive-expressive – 5.6%.

The structure of the leading motives in this group is following (the motives are mentioned in the order of rank significance): (1) material stimulation of the working activity; (2) contribution of the enterprise to the employees' accommodation purchase (co-financing); (3) guaranteed employment; (4) social package; (5) financing employees' education by the employer; (6) job promotion; (7) development and improvement of professional competences; (8) affiliation to the leading company.

Summarizing the results we can come to the conclusion on the domination of the progressive-impulsive and regressive-impulsive types in this group and on the prevailing the consuming motives over productive ones.

5. FUTURE RESEARCH DIRECTIONS

Current research is aimed at the studying motivational potential of the high-tech industrial enterprise, which is being prepared to decommissioning. For providing effective production at this stage of its life cycle, the human resources reserve is being formed. The reserve is formed not only of the inner sources (actual employees of the enterprise), but of the outer sources as well: employees of other enterprises of the industry, graduates of the universities and colleges etc. On our opinion studying the motivational potential of the specialists to be involved from the outer sources is a problem of the highest importance.

Previously we have underlined that in order to provide an effective activity of the high-tech enterprise at the stage of decommissioning innovative technologies should be applied. For their implementation specialists with a certain personal potential (resistance to stress, developed creative thinking, pronounced cognitive motivation) should be got involved. In this context studying correlations between motivational potential, professional adaptation and effectiveness of the activity of the employees are of importance. The data concerning personal potential of the personnel can be used for developing criteria of the professionally important qualities for new directions of activity.

6. CONCLUSION

The results of the current research confirm the data from other sources and show that during the period of decommissioning, when the staff faces the problem of future employment, changes in motivational sphere of the employees can occur (Vernon, 1969; Armstrong, 2010). First of all, it should be mentioned that certain attitudes towards the activity are being formed.

The results of the survey show that the number of respondents with a positive attitude to the continuing the activity in the same industry is 82% of the whole sample, those in the decision making process – 10% and intending to resign – 8%. Those data are very different from the calculated values (65%, 3%, 32% relatively), which had been considered while

designing the operating plan for decommissioning. These differences can be explained. Taking into account that there are no such data in other sources as there is no experience of decommissioning of the enterprise of such type, the management had been guided by the values existing in other spheres of industry. Thus, the obtained data on the motivational readiness of the personnel to continuation of the activity at the final stage can be used as the orientation basis for designing a project on the staff rotation in the enterprises of the industry and in strategic planning.

The analysis of work motives of the employees who are ready to continue working during the enterprise shutdown (the number is 43%) shows that their leading motives are: material stimulation of the work activity; guaranteed employment; job promotion; development of professional competences; affiliation to the company, having leading positions in the world energy market. The analysis of the motivational orientation profiles allows making a conclusion on the pronounced inclination of the employees of this group to professional promotion and achievements, intention to get recognition and significance in the professional environment. These regularities can be used while designing programs of extra material and non-material kinds of stimulating of work activity.

The research has marked out a group of employees (22% of the sample) with high readiness to any possible variant of their future employment at the enterprises of the industry and orientation to the needs of the enterprise in resource allocation. A single type of the motivational profile dominates in this group – the progressive one. Its characteristic feature is the orientation of a personality on the development of the activity by one's initiative. Cognitive orientation, in its turn, reflects a creative approach to the activity and a high level of social and personal maturity. The analysis of the leading work motives in this group allows making a conclusion of a pronounced commitment to the profession and of the importance of the motives of self-actualization, directed to the professional development and professional achievements.

The knowledge of the characteristics of the motivational sphere of the employees with high mobility and the intention to make their contribution to the production development and improvement of the enterprise activity has a great importance for developing training programs, professional growth and evaluation of individual achievements of the specialists (Arkes & Garske, 1997; Dessler, 2010).

More than one third of the sample (35%) demonstrates readiness to continue their work activity at the enterprises of the industry situated in the regions with favourable climate and developed social structure. In this group there is a tendency to domination of the motives of guaranteed employment, material security and job promotion. The analysis of the data on motivational profiles distribution shows that the most frequent types in this group are the regressive and the regressive-expressive ones, which are associated with such features as self-affirmation in the society, developed ambition, eccentricity and constant rising of aspiration level. These regularities can be used for developing programs of material and non-material stimulation of the work activity and career growth.

In the course of the research a group of the respondents is found out, who have complications in making the decision whether to continue the activity at the enterprise during its decommissioning, to be transferred to other enterprises of the same industry or to resign and search for their new employment independently. The analysis of the motivational sphere shows that, on one hand, their consuming motives, associated with material security, are considerably pronounced, and on the hand, communication and affiliation to the company are very important for them. For the employees with such attitude is helpful to carry out organizational arrangements (discussions, consultations, negotiations etc.), aimed at assistance in making a decision on the future interaction with the employer.

The obtained data concerning motivational potential of the personnel during the preparation of the high-tech enterprise to the decommissioning allows taking a more focused view at some factors of professional motivation.

The results of the research can be applied in the practice of dealing with personnel in various spheres of high-tech industrial production.

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