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New trends in the development of the MGSU department “Organization of construction and real estate management”. How the industrial practice of MGSU students at Akkuyu NPP was held

This paper tells about how the MGSU department “Organization of construction and real estate management” (OSUN) has started another new unique tradition — the organization of foreign internship of students. In accordance with the agreements, the students of the OSUN Department had a foreign internship at the Akkuyu NPP in the Republic of Turkey. The State Atomic Energy Corporation “Rosatom” is a diversified holding company that unites assets in power engineering, mechanical engineering and construction. Akkuyu NPP is the first nuclear power plant in the Republic of Turkey. The project of the first Turkish NPP includes four power units with Russian-designed VVER-1200 reactors. The construction of Akkuyu NPP is the first project in the world nuclear industry realized by Build-Own-Operate model. The OSUN Department has been operating for more than 90 years, has its own history and established traditions. Keeping up with the times, taking into account the current innovative trends and challenges in the field of construction, economy, education, the department organized a foreign internship for students. What difficulties were encountered and why this “pilot project” is a very valuable, landmark experience not only for the department, but also for NRU MGSU. According to the results of the joint project, it can be noted that the goals and objectives have been achieved. The parties were satisfied with the results, noted the importance of this format of cooperation and planned further relations.

Keywords: *Rosatom State Corporation, NRU MGSU, AKKUYU NÜKLEER ANONİM ŞİRKETİ, foreign internship of students, construction, innovations*

INTRODUCTION

It is known that at all stages of collective development large and small traditions arise, strengthen and unite the collective. “Tradition — (from Latin tradition — transmission), elements of social and cultural heritage, passed from generation to generation and preserved in certain societies and social groups for a long time. Traditions are certain social norms, norms of behavior, values, ideas, customs, rituals, etc. These or those traditions operate in any society and in all areas of social life” [1, p. 364]. Traditions change and are renewed. New tasks facing the team, new ways of solving them become more or less popular over time — this contributes to the emergence of new and erasure of old traditions.

Following this definition, the university should be governed by traditions. The Department of OSUN, which has been operating for over 90 years, which has a unique highly qualified faculty, which has graduated several tens of thousands of doctors and candidates of sciences, specialists in the field of organization and management of construction projects, has its own history and established traditions¹.

Throughout its long history, the main vector of the Department’s development has been and remains the desire to provide comprehensive consideration of key aspects of the organization and economics of construction, investment and construction activities, expertise and real estate management within the framework of educational and research activities [2–4].

Today the OSUN department is one of the leading and largest departments of the university, specializing in teaching students the basics of development, project management, expertise of design and estimate documentation, organization and technology of construction, economics and real estate management, risk management in the investment and construction sphere, management of housing and communal facilities and a number of other disciplines related to the implementation of investment and construction projects and management of real estate objects of various levels of complexity.

The department has active international cooperation with the world’s leading organizations in the field of construction, development and surveying.

Keeping up with the times, taking into account the current innovative trends and challenges in the field of construction, economy, education, the department continues to multiply its traditions.

An example of this is the birth of a new tradition, another project of the department — foreign internship of students. In the summer of 2024, on the initiative and thanks to the personal connections of the head of the OSUN Department P.G. Grabovyy, an unprecedented in its geographical scope and scientific — practical significance industrial internship was organized for 3rd year students at the Akkuyu NPP in Silifke, Turkey, and Ho Chi Minh City University of Architecture in Ho Chi Minh City, Vietnam.

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THE MAIN PART

So, a bit of background: how we organized industrial practice of MGSU students at Akkuyu NPP.

On May 12, 2010 the Governments of the Russian Federation and the Republic of Turkey signed an Agreement on cooperation in the construction and operation of a nuclear power plant at the Akkuyu site in the Turkish province of Mersin².

Akkuyu NPP is the first nuclear power plant in the Republic of Turkey. The project of the first Turkish NPP includes four power units with Russian-designed VVER-1200 reactors with a total capacity of 4800 MW. The construction cost is estimated at more than \$ 20 billion. After commissioning of all four power units, Akkuyu NPP will generate 40,000 million kWh.

The construction of Akkuyu NPP is the first project in the global nuclear industry to be implemented under the Build-Own-Operate model. Under the terms of the Intergovernmental Agreement between the Russian Federation and the Republic of Turkey, the commissioning of the first power unit of the NPP should take place within 7 years after all permits for the construction of the unit have been obtained. Taking into account the receipt of the license for the construction of power unit No. 1 in 2018, this term means 2025 (Fig. 1)³.

In 2022, the Ministry of Energy and Natural Resources of the Republic of Turkey, the State Atomic Energy Company Rosatom, AKKUYU NUKLEAR JSC, Russian and Turkish universities signed a Protocol on cooperation in the development of joint educational programmes in higher education. The document envisaged the course of a joint two-year Master's degree programme of MEPhI and Istanbul Technical University (ITU). The first admission to the preparatory department of MEPhI with subsequent enrollment in the joint master's programme was held in 2023⁴.

The State Atomic Energy Corporation Rosatom is a diversified holding company that combines assets in power engineering, mechanical engineering, and construction. Its strategy is to develop low-carbon generation, including wind power. ROSATOM is the national leader in electricity generation (about 20 % of total generation) and ranks first in the world in terms of the portfolio of orders for the construction of nuclear power plants: 39 power units (including six small capacity units) in 10 countries are at various stages of implementation. Rosatom's

activities also include production of innovative non-nuclear products, logistics and development of the Northern Sea Route, and implementation of environmental projects. The State Corporation unites more than 450 enterprises and organizations, employing over 350 thousand people⁵.

The programme of training highly qualified Turkish specialists for Akkuyu NPP is actively continuing. 296 young engineers have already graduated from Russian universities and are gaining interesting professional experience at the largest nuclear construction site in the world.

320 people have already received education in specialized Russian universities (MEPhI, SPbPU), 38 people are currently studying, and another 47 people are planning to enroll next year. In total, according to the plans, about 600 Turkish young specialists are to be trained during the construction period, and then they will work at Akkuyu NPP. These 320 specialists are already members of the team and are successfully working at our project^{6, 7}.

In the coming years, another 300 Turkish specialists will be trained to join the Akkuyu NPP project team. Training in Russia involves not only theoretical training, but also practical internships at operating nuclear power plants. This allows young Turkish engineers not only to gain knowledge, but also invaluable experience working at nuclear power plants, so that they can successfully develop nuclear technologies in their country [5].

NRU MGSU is one of the leading higher educational institutions in Russia. It trains highly qualified specialists for the construction industry, as well as various sectors of the economy. The mission of NRU MGSU is to create a system of advanced personnel and scientific support of the process of qualitative modernization of the investment and construction complex for the successful solution of priority state tasks of high-tech and social development of Russia based on the formation of innovative scientific and educational base for training of modern builders and architects who create a safe, energy-efficient and comfortable living environment⁸ [6].

Within the framework of these tasks, following the example of Russian universities, in 2024 between NRU MGSU and AKKUYU NUKLEAR ANONİM ŞİRKETİ, was concluded an agreement on the organization of practical training and internship of students.

2 Agreement between the Government of the Russian Federation and the Government of the Republic of Turkey on cooperation in the field of construction and Operation of a nuclear power plant at the Akkuyu site in the Republic of Turkey. URL: https://www.mid.ru/ru/foreign_policy/international_contracts/international_contracts/2_contract/45077/

3 About the Akkuyu NPP project. URL: <https://akkuyu.com/ru/about/info>

4 The joint Russian-Turkish double degree Master's degree educational programme for the training of Turkish engineers at Akkuyu NPP is starting. URL: <https://www.atomic-energy.ru/news/2023/06/22/136428?ysclid=izl8lwg45s562555979>

5 Rosatom's innovative development programmes. URL: <https://www.rosatom.ru/about/>

6 Denis Sesemin: unique experience has been gained in the construction of the Akkuyu NPP. URL: ezemin-1957087185.html

7 The fifth group of students from Turkey came to Russia under the Akkuyu NPP specialist training programme. URL: <https://www.in-power.ru/news/aes/pyataya-gruppa-studentoviz-turtsii-priehala-v-ro.html>

8 Mission of the National Research University (NRU MGSU). URL: <https://mgsu.ru/universityabout/>



Fig. 1. Akkuyu NPP³

WHY WE NEED OVERSEAS INTERNSHIPS FOR STUDENTS

Industrial practice is a great opportunity to show students how work is organized in various companies, to familiarize them with different areas of development and to help them decide on their future profession. Of course, it is difficult to teach something in 4–6 weeks, but it is possible to give students practical knowledge, guide them, and outline a development vector.

After the end of the third year, all students face a difficult choice — where to do their internship. Industrial practice is an important stage in the educational programme. In the process of practice students get the opportunity to work in the construction industry, in the company, where in the future they will be able to work in the future. In practice they can face real production tasks and apply in reality the knowledge gained. It is always exciting, because you want to get as much experience as possible and feel your profession⁹.

It is important to show students live people: adequate, experienced, charismatic specialists who are ready to share their knowledge. No one will allow us to tear leading specialists away from their work for at least 1–2 weeks. It is very expensive. Of course, we can hire a special person — a “shepherd” for students, but without project experience and knowledge of technologies, such mentoring will be of little use. And with project experience and knowledge, it is again unreasonably expensive. Is there any way to solve this problem effectively?

I will allow myself to exaggerate a little, but often practice often looks like this: a stern-looking man comes in, shows a machine and says: “Here is the machine, but do not touch it, it is dangerous. This is how I sharpen a part. Got it? Take notes, it might come in handy. Everyone is free, come back in two weeks, I will sign the papers”.

But we don't want it that way. The OSUN Department decided to go the other way and show the students how real projects are created, what a real large-scale construction is. And not just an ordinary construction project, but an interstate, strategically important, unique project.

Determination of the place of practice by the management of the department, which offered students such a unique opportunity — to undergo practical training at such large facilities in foreign partner countries, was a pleasant surprise for the students. The practice was organized for 3rd year full-time students of the Institute of Economics, Management and Communications in the field of construction and real estate in the direction of training 08.03.01 Expertise and Real Estate Management and the Institute of Architecture and Urban Planning in the direction of training 07.03.01 Architecture.

Out of many applicants, after passing a difficult selection process, the following students were lucky enough to go on industrial practice in Turkey, to the construction site of the nuclear power plant “Akkuyu”: A.L. Grabovyy (IAG-3-53), A.S. Baranova (IEUKSN-3-9), S.S. Barinova (IEUKSN-3-11), E.I. Valueva (IEUKN-3-9), I.E. Varganova (IEUKSN-3-10), Kovtun A.S. (IEUKSN-3-9) (Fig. 2).



Fig. 2. Going to Akkuyu NPP in Silifke, Turkey

► The purpose of the internship was to familiarize MGSU students with NPP facilities, infrastructure projects, to consolidate theoretical knowledge obtained during classroom training and to increase practical new competencies.

Senior students from MGSU are for the first time undergoing industrial practice at Akkuyu NPP. Its important goal is to familiarize students with the social environment of the enterprise in order to acquire personal competencies that they will need in the future for their future employment in their specialty.

The aim and objectives of the internship are to consolidate and expand students' theoretical knowledge obtained at the university, to study the experimental and practical base, as well as the principles of operation of the world's first NPP.

HOW MSCU STUDENTS SPENT THEIR INTERNSHIP DAYS AT AKKUYU NPP

In agreement with the management of Akkuyu NPP, in order to give the students an opportunity to try themselves in different directions, the internship programme was divided into weeks, in each of which a role was assigned to a certain stage of the construction life cycle (Table).

Experienced specialists from Akkuyu NPP were invited as lecturers, ranging from department heads, leading developers, experienced testers.

WHAT WE HAVE LEARNED

Bottom line from the employer:

In addition to the main internship plan, also during the internship period, the following tasks were given to MGSU students, from the internship supervisor from "Akkuyu" side:

- 1) working with the EPC contract (looking for specific articles to reference in official letters);
- 2) verification of Technical Cards, regulations and WPP;
- 3) inspections:
 - concreting Readiness Control 30UMA;
 - monitoring the readiness to start drying of the NW 40UJA;
 - control over the organization of blasting operations;
 - testing of concrete mix B60 W10 SF2;
 - control of approbation of manual method of application of repair composition on ceiling surfaces;

Internship programme for MGSU students at Akkuyu NPP construction site

Period	Outside the divisions	Within divisions
02.07–05.07	<ul style="list-style-type: none"> • Physical exam 	<ul style="list-style-type: none"> • Familiarization with
Week 1	<ul style="list-style-type: none"> • safety and security briefings; • introductory; • primary; • targeted; • receipt of PPE; • organizational meeting (D.E. Sezemin, A.V. Kvasha, D.A. Radchenko); • a dialog with the chief inspector about safety culture; • practical seminar "Fire Safety at NPPs", visit to the fire station; • familiarization with the construction site, with the head of the CCD; • familiarization with RMD of CCD and MMF; • familiarization with NTD 	<ul style="list-style-type: none"> • the activities of the units; • RMD Study; • study of PD, WD, OTD; • participation in inspections; • participation in meetings; • Unit Work
08.07–12.07 Week 2	<ul style="list-style-type: none"> • technical tour of GTV Vostochny: peculiarities of design, erection and operation; • obtaining credentials, familiarization with the Company's corporate resources; • information security briefing; • lectures (3 pcs) "Peculiarities of Work Organization on NPP Construction Projects Abroad". A.Y. Zabrodin, A.P. Pustovgar; • technical tour with TMR: main process systems and equipment of the reactor building (UJA). Features of the TMR 	<ul style="list-style-type: none"> • study of PD, WD, OTD; • participation in inspections; • participation in meetings; • Unit Work
15.07–19.07 Week 3	<ul style="list-style-type: none"> • technical Tour Training Centre of the General Contractor; • technical tour in Armutsehta Industrial: "Production of MS, EP, embedded blocks"; • technical tour with TMR: main process systems and equipment of the turbine building (UMA, engine room) and the desalting unit building (UMX) 	<ul style="list-style-type: none"> • study of PD, WD, OTD; • checking OTD, issuing remarks; • participation in inspections; • attendance at meetings; • Unit Work
22.07–26.07 Week 4	<ul style="list-style-type: none"> • lecture "Peculiarities of Schedule and Network Planning in NPP Construction"; • BRH Inspectorate; • Construction Laboratory Inspection; • DSU Inspection; • FTA 30UMA Concrete Inspection 	<ul style="list-style-type: none"> • study of PD, WD, OTD; • checking OTD, issuing remarks; • participation in inspections; • attendance at meetings; • Unit Work
29.07–30.07 Week 5	<ul style="list-style-type: none"> • technical tour: Station staff residential camp in Silifke; • sightseeing tour: port, zone inside containment 10UJA, panorama of 4 blocks, mark +200; • summarizing the practice; • report Formation; • final meeting with the Company's management 	<ul style="list-style-type: none"> • study of PD, WD, OTD; • checking OTD, issuing remarks; • participation in inspections; • attendance at meetings; • Unit Work



Fig. 3. MGSU students during work at different sites



Fig. 4. Concreting process of turbine unit foundation

- 4) weekly participation in concreting quality meeting (draft meeting minutes);
- 5) work in the archive (checking completeness, stamping);
- 6) automation of cumulative statements in excel, creation of graphs;
- 7) assist in the preparation of formal letters.

These tasks were assigned personally to each individual and it was commended that the students were successful.

OUTCOMES FROM THE STUDENTS THEMSELVES

During the internship we were familiarized with many facilities, including:

- concrete plant;
- in the rebar shop;
- at the firehouse;
- participated in the concreting of the turbine unit slab;
- in the turbine case;
- at the harbor;
- on the crusher;

- at the staff training centre;
- we calculated the volumes for the rooms from the drawings;
- in a staff housing development under construction.

During the internship, specialists of Akkuyu NPP gave very interesting and informative lectures from the plant employees on the following topics: scheduling, interaction of construction participants, introduction to the nuclear industry (Fig. 3).

On the final day of practice, July 31, the students had a rare and unique opportunity to observe the process of concreting the foundation of the turbine unit (Fig. 4)³.

LEISURE TIME

Despite the busy schedule, and it should be noted here that the working day started with breakfast at 6 a.m., and they left for work from 7 a.m. to 6 p.m., the students still managed to visit the sights located near the NPP. The students visited historical places of Adana and Mersin cities, familiarized themselves with customs and traditions of Turkish people (Fig. 5).

RESULTS

On the eve of the completion of the internship at Akkuyu, a round table was held to discuss the issues of the students' past internship.

Therefore, summarizing the results of our first foreign "pilot" project — industrial practice of MGSU students at Akkuyu NPP, we can conclude that the current industrial practice has shown the need for further bilateral constructive interaction. The students have a unique opportunity to join a significant state project, the opportunity to feel their importance in practice, using the theoretical knowledge obtained at the OSUN Department. For "Akkuyu", this project provides an opportunity not only to find future employees, but also an excellent format to share their knowledge and experience with young specialists.

Participation of MGSU students in the realization of such a large-scale international project is, first of all, an opportunity to get an exceptional professional experience and knowledge, to open for themselves in the future interesting employment prospects, to put into practice the knowledge gained at MGSU, to practice working and communicating in foreign languages and, of course, to find new friends.

The internship gave students not only a very valuable experience of professional activity abroad, but also an opportunity to plunge into



Fig. 5. Leisure activities. Familiarization with the places of interest in Turkey



Fig. 6. Meeting with the company's executives



the life of a completely different country, as well as to get acquainted with wonderful, talented people, high-class professionals.

The tour around the construction site of Akkuyu NPP made an indelible impression and delight. We studied with interest the four power units under construction, the world's only polar crane with a lifting capacity of 3 tons, and the work of the construction workers, whose number is about 30,000 people.

WHICH WE DID WELL

We developed an interesting and useful format. Judging by the feedback, the students liked the practical orientation and the opportunity to gain experience working on a real project.

Experienced specialists were involved. All lecturers are highly qualified professionals who were able to interest students and answer all their questions. During the internship period various official events were organized, which were attended by S.M. Butskikh, General Director of JSC "Akkuyu Nuclear", D.E. Sezyomin, Construction Director, and A.V. Kvasha, HR Director (Fig. 6).

They showed how work is organized in the company. Students saw how development processes are organized, how interaction between different specialists takes place.

We would also like to express our special gratitude to I. Blinov, the practice supervisor from "Akkuyu", a graduate of MGSU, chief specialist of the construction works department for his tireless attention and participation, organization and control in conducting the practical training of our students.

WHAT MISTAKES WERE MADE

Not optimal distribution of students. It is necessary to divide students into groups in different areas in future years. Each group should be assigned a responsible person and summarize weekly results in the format of a round table.

Interaction with the practice departments of universities is rather rough. **It is not so easy to coordinate documents, approve them with lawyers (ours and those of the universities) and sign them. We need to put more time and resources into this.**

WHAT ARE THE PROS OF INTERNSHIP FOR THE COMPANY?

Presence in higher education institutions. Building a long-term relationship with MGSU. Moreover, the university should be

interested in getting the students to some decent place where they will be engaged and interested in themselves.

Student Assistance. We try to respond as quickly as possible to students' requests and help solve problems, including problems with documents.

Next year, when the company needs interns, you **will not have to spend time looking for them.** The company already has a base of students who know and like the company.

FUTURE PLANS:

- **discussion of the possibility of future formation of a personnel reserve on the basis of MGSU for Akkuyu** (road-map plan for the realization of the "personnel reserve" project);
- **study of social infrastructure development within the framework of the global project "Akkuyu"**, including: housing stock, schools, kindergartens, etc. This item is of particular interest to the department. Understanding of the management system, with a view to the prospects of training students on the basis of the OSUN Department for further employment and participation in the formation of the system of life cycle management of real estate objects in the town under construction for NPP employees;
- **opportunities for long-term cooperation in the formation of scientific and production base.** Develop programmes and conduct systematic professional retraining (additional education) for Akkuyu employees in the areas of "Development", "Housing and utilities", "Forensic examination and management of real estate".

Summarizing the results of the joint project, it is safe to say that the parties were satisfied with the results, emphasized the importance of this format of cooperation and planned to further develop this direction. It is also worth noting that following the results of the internship several of our students were invited to work after graduation. This is very important and indicative!

REFERENCES

1. Efremova T.F. *A new dictionary of the Russian language. Explanatory and educational.* Moscow, Rus. lang. Publ., 2000; 2:567. (rus.).
2. *Organization of construction and real estate development : textbook for students; in 2 parts.* P.G. Grabovyy (Ed.). Moscow, ASV; Prosvetitel' Publ., 2018. (rus.).

3. *Economics and real estate management : Textbook for Universities in two parts. Part 2: Property Management. 4th ed. reprint. and additional. Grabovyy P.G. (Ed.). Moscow, ASV; Prosvetitel' Publ., 2019; 512. (rus.).*

4. *Servicing: organization, Expertise, management : Textbook for Universities in three parts. Part III. 2nd ed., reprint. and additional. Grabovyy P.G. (Ed.). Moscow, ASV; Prosvetitel' Publ., 2021; 520. (rus.).*

5. *Grabovyy P., Sezemin D. Aggregate risk of a large complex construction projects of NPP. International Journal for Computational Civil and Structural Engineering. 2023; 19(4):38-47. DOI: 10.22337/2587-9618-2023-19-4-38-47. EDN UPCJRZ.*

6. *Grabovyy P.G., Volgin V.V., Kushchenko I.V. et al. Technology of the organization of spatial renewal of urban real estate, concentration and specialization of industrial production : monograph. P.G. Grabovyy (Ed.). Moscow, Prosvetitel' Publ., 2024; 277-289. (rus.).*

Новые тренды развития кафедры ОСУН. Как прошла производственная практика студентов МГСУ на АЭС «Аккую»

В статье рассказывается о том, как на кафедре «Организация строительства и управления недвижимостью» (ОСУН) МГСУ было положено начало еще одной, новой уникальной традиции — организации зарубежной производственной практики студентов. В соответствии с достигнутыми договоренностями прошла зарубежная стажировка студентов кафедры ОСУН на АЭС «Аккую» в Турецкой Республике. Государственная корпорация по атомной энергии «Росатом» — многопрофильный холдинг, объединяющий активы в энергетике, машиностроении, строительстве. АЭС «Аккую» — первая атомная электростанция в Турецкой Республике. Проект первой турецкой АЭС включает в себя четыре энергоблока с реакторами российского дизайна ВВЭР-1200. Сооружение АЭС «Аккую» — первый проект в мировой атомной отрасли, реализуемый по модели Build-Own-Operate. Кафедра ОСУН осуществляет свою деятельность на протяжении более 90 лет, имеет свою историю и устоявшиеся традиции. Идя в ногу со временем, принимая во внимание нынешние инновационные тренды и вызовы в сфере строительства, экономики, образования, на кафедре была организована зарубежная стажировка студентов. С какими же трудностями они столкнулись и почему этот «пилотный проект» является очень ценным, знаковым опытом не только для кафедры, но и для НИУ МГСУ в целом. По итогам совместного проекта можно отметить, что поставленные цели и задачи решены. Стороны остались довольны результатами, отметили важность такого формата сотрудничества и запланировали дальнейшие взаимоотношения.

Ключевые слова: ГК «Росатом», НИУ МГСУ, АККУУУ NÜKLEER ANONİM ŞİRKETİ, зарубежная стажировка обучающихся, строительство, инновации

СПИСОК ИСТОЧНИКОВ

1. Ефремова Т.Ф. *Новый словарь русского языка. Толково-образовательный* : в 2 т. М. : Рус. яз., 2000. С. 567.
2. *Организация строительства и девелопмент недвижимости : учебник для студентов* : в 2 ч. / ред. П.Г. Грабовый. М. : Изд-во АСВ; Просветитель, 2018.
3. *Экономика и управление недвижимостью : учебник для вузов в двух частях. Часть 2: Управление недвижимостью : учебник. 4-е изд. перераб. и доп. / под общ. ред. П.Г. Грабового. М. : Просветитель, Изд-во АСВ, 2019. 512 с.*
4. *Сервейинг: организация, Экспертиза, управление : учебник для вузов в 3-х ч. Т. III. 2-е изд., перераб. и доп. / под общ. ред. П.Г. Грабового. М. : Просветитель, Изд-во АСВ, 2021. 520 с.*
5. *Grabovyy P., Sezemin D. Aggregate risk of a large complex construction projects of NPP // International Journal for Computational*

Civil and Structural Engineering. 2023. Vol. 19. No. 4. Pp. 38–47. DOI: 10.22337/2587-9618-2023-19-4-38-47. EDN UPCJRZ.

6. *Грабовый П.Г., Волгин В.В., Куценко И.В. и др. Технология организации территориально-пространственного обновления городской недвижимости, концентрации и специализации промышленного производства : монография / под общ. ред. П.Г. Грабового. М. : Просветитель, 2024. С. 277–289.*

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