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NB

**ENERGY INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

NB/T 20357-2018

Replacing NB/T 20357-2015

**Machinery cost quota for nuclear power plant construction
project**

核电厂施工机械台班费用定额

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Foreword

This document was issued on 22 March 2018 by the National Energy Administration of the PRC and takes effect on 1 September 2018.

It is a NB/T standard: recommended rather than compulsory, but it is the text a Chinese reviewer applies when assessing a submission.

It is classified under ICS 01.040.27, Chinese classification F 02.

It replaces NB/T 20357-2015, which is superseded.

NB/T 20357 Machinery Shift Cost Quota for Nuclear Power Plant Construction Projects, NB/T 20355 Cost Quota for Nuclear Island Building and Installation Works of Nuclear Power Plant Construction Projects, NB/T 20356 Cost Quota for Conventional Island Building and Installation Works of Nuclear Power Plant Construction Projects and NB/T 20358 Budget Quota for Nuclear Power Plant Construction Projects together make up the series of nuclear power quota standards that support budgeting and pricing of nuclear power construction works.

Among them, NB/T 20358 Budget Quota for Nuclear Power Plant Construction Projects currently comprises 16 parts, composed as follows.

Part 1: Nuclear island civil works.

Part 2: Nuclear island decoration works.

Part 3: Nuclear island steel structure works.

Part 4: Nuclear island process equipment installation works.

Part 5: Nuclear island process piping installation works.

Part 6: Nuclear island ventilation and air conditioning installation works.

Part 7: Nuclear island electrical equipment installation works.

Part 8: Nuclear island automatic control instrumentation installation works.

Part 9: Nuclear island communication equipment installation works.

Part 10: Nuclear island anticorrosion and thermal insulation works.

Part 11: Conventional island civil works.

Part 12: Conventional island thermal equipment installation works.

Part 13: Conventional island electrical equipment installation works.

Part 14: Commissioning works.

Part 15: Fabrication of modules and steel containment vessel.

Part 16: Assembly and erection of modules and steel containment vessel.

This quota is NB/T 20357 Machinery Shift Cost Quota for Nuclear Power Plant Construction Projects (hereinafter referred to as this quota). It was issued by Announcement No. 2 (2018) of the National Energy Administration, approved on 22 March 2018 and put into implementation on 1 September 2018.

This quota was proposed by the Nuclear Power Standardization Technical Committee of the energy industry.

This quota is under the jurisdiction of the Nuclear Industry Standardization Research Institute.

Main drafting organizations of this quota: China Nuclear Power Engineering Co., Ltd.; China Nuclear Power Engineering Co., Ltd. (CGN); Electric Power Planning and Engineering Institute; China Nuclear Industry 23 Construction Co., Ltd.; China Nuclear Industry Huaxing Construction Co., Ltd.; China Nuclear Industry 22nd Construction Co., Ltd.

Main drafters of this quota: Zhao Yang, Wang Fang, Chi Jing, Han Zhaoxing, Kong Liang, Wei Youlu, Liu Bingwen, Yu Chuanjiang, Zhao Li and Zhou Xiaozhong.

This quota replaces NB/T 20357-2015. The filing number is 62782-2018.

Explanation of this Volume - Scope

This quota specifies the cost quota for building and installation works of nuclear power plant

construction projects.

This quota applies to the nuclear island works of newly built and extended pressurized water reactor nuclear power units, and to those sub-items of the BOP works that carry nuclear safety requirements, such as the nuclear island liquid waste storage tank building, the conventional island liquid waste storage tank building, the auxiliary building for treatment of radioactive solid waste, the temporary solid waste store, and the radioactive maintenance and decontamination workshop.

Nuclear power projects with other reactor types and other nuclear projects may use this quota for reference.

Explanation of this Volume - General Explanation

1. The Machinery Shift Cost Quota for Nuclear Power Plant Construction Projects (hereinafter this quota) was compiled and supplemented on the basis of the Rules for the Compilation of Machinery Shift Costs of Construction Works promulgated by the Ministry of Construction in 2015 and the Machinery Shift Cost Quota for Electric Power Construction Works issued by the China Electricity Council in 2006.

The unit price per machine shift is based on the types and prices of machinery found on nuclear power plant construction sites (crawler cranes with a lifting capacity above 750 t are not included). The prices were compared with the national price level for machinery of the same kind, and some of them were adjusted accordingly.

This quota is the basis for compiling the preliminary and detailed budget quotas of nuclear power plant construction projects, and a reference for agreeing on the rental cost of construction machinery per shift.

2. This quota covers eleven chapters and a total of 529 sub-items, plus the annexed tables of basic data: earthwork, rock and road building machinery; hoisting machinery; horizontal transport machinery; vertical transport machinery; concrete and mortar machinery; processing machinery; pump machinery; welding machinery; power machinery; other machinery; and containment prestressing tensioning machinery.

3. Each machine shift in this quota is calculated on the basis of an 8-hour working system.

4. This quota is made up of the following seven cost items.

- 1) Depreciation cost: the cost of progressively recovering the original value of the construction machinery, together with the time value of the capital, within the prescribed service life.
- 2) Overhaul cost: the cost required to carry out the necessary overhaul at the prescribed overhaul intervals so as to restore the normal function of the construction machinery.
- 3) Routine repair cost: the cost required for all levels of maintenance and for the clearing of

incidental faults other than overhaul. It includes the cost of replacing and maintaining the tools and accessories that go with the machine so that it runs normally, the cost of the lubricating and wiping materials consumed in routine maintenance while the machine is running, and the cost of maintenance and preservation during machine downtime.

4) Installation, dismantling and on-site transport cost.

The installation and dismantling cost refers to the labour, materials, machinery and trial running costs required to erect and dismantle the construction machinery on site (large machinery excepted), together with the depreciation, erection and dismantling costs of the auxiliary facilities of the machinery.

The on-site transport cost refers to the cost of transporting and moving the construction machinery, either whole or in parts, from one working point of the construction site to another.

Machinery for which this cost item is not listed in this quota falls into two categories: machinery for which the cost item should not be considered, such as horizontal transport machinery; and machinery for which the cost item is calculated separately, such as tower cranes.

5) Labour cost: the daily wages of the machine operator (or stoker) and of the other operating personnel, together with the wages of those personnel for the working days beyond the machine shifts prescribed for the construction machinery in a year.

The unit labour price in this quota is 120.00 yuan per working day.

6) Fuel and power cost: the cost of the solid fuel (coal, firewood), liquid fuel (gasoline, diesel oil), water and electricity consumed by the construction machinery while it is operating.

7) Other costs: the road maintenance fee, vehicle and vessel use tax, insurance premium, reinforcement fee and annual inspection fee that the construction machinery has to pay in accordance with the provisions of the State and of the departments concerned. These are not itemized in this quota; when it is used they may be entered into the machine shift unit price in accordance with the standards laid down by each province or municipality (autonomous region).

Table 1 Unit Prices of Fuel and Power Materials

5. The unit prices of fuel and power materials in this quota are the December 2016 prices for the Beijing area, as detailed in the table below.

Item 1, gasoline, unit kg, unit price 8.32 yuan.

Item 2, diesel oil, unit kg, unit price 7.78 yuan.