CTBTO PREPARATORY COMMISSION | preparatory commission for the comprehensive nuclear-test-ban treaty organization

REQUEST FOR PROPOSAL

THIS IS NOT AN ORDER

To: ALL BIDDERS

CTBTO Ref. No.: **2023-0021/Apylov** **BA**
(PLEASE QUOTE ON ALL COMMUNICATIONS)

Tel. No.: +43 (1) 26030-6350
E-mail: procurement@ctbto.org

Attn.: Sales Manager
Phone:
Email:

Date: 10 Mar 23

Title of Request: Lot 1 - "Upgrade of fire alarm and safeguarding systems at the stations PS33/IS46/RN59 Zalesovo, the Russian Federation"
Lot 2 - "Upgrade of fire alarm and safeguarding systems at the stations PS36/IS44/RN60 P-Kamchatskiy, the Russian Federation"

Deadline for Submission: 5 Apr 23 ***Vienna Local Time:*** 17:00

The Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization (hereinafter referred to as the 'Commission') hereby invites you to bid the following items as per conditions listed below.

Item	***Description and Requirements***	***Quantity***	***U/M***
1	Upgrade of fire alarm & safeguard systems at PS33/IS46/RN59, Zalesovo, the Russian Federation		Lot 1
2	Upgrade of fire alarm & safeguard systems at PS36/IS44/RN60, P-Kamchatskiy, the Russian Federation		Lot 2

When preparing your bid, please follow the attached instructions. You are kindly requested to complete and return the acknowledgement form by e-mail as soon as possible. If you have any questions you should contact the e-mail address indicated above. We look forward to receiving your bid.

Yours sincerely,

Sally Alvarez De Schreiner
Chief, Procurement Section

CTBTO PREPARATORY COMMISSION | preparatory commission for the comprehensive nuclear-test-ban treaty organization

ACKNOWLEDGEMENT FORM

Solicitation No: 2023-0021	***Closing Date:*** 5 Apr 23
Title: "Upgrade of fire alarm and safeguarding systems Lot 1 and Lot 2, the Russian Federation	***Vienna Local Time:*** 17:00

Procurement Staff: Bugubai Apylov ***CTBTO Req. No.:*** 0010021260

Please complete 'A' or 'B' or 'C'
and Return

WITHIN FIVE (5) DAYS

THE PREPARATORY COMMISSION FOR THE
COMPREHENSIVE NUCLEAR-TEST-BAN TREATY ORGANIZATION (CTBTO)

by email to
procurement@ctbto.org

A: We shall submit our bid

By: _____ (date)

Company Name: _____

Contact Name: _____

Email/Tel: _____

B: We may submit and will advise

By: _____ (date)

Company Name: _____

Contact Name: _____

Email/Tel: _____

C: We will not submit a bid for the following reason(s)

___ our current workload does not permit us to take on additional work at this time;
___ we do not have the required expertise for this specific project;
___ insufficient time to prepare a proper submission;
___ other (please specify)_____

Company Name: _____

Contact Name: _____

Email/Tel: _____

INSTRUCTIONS FOR PREPARATION AND SUBMISSION OF PROPOSALS

1. General

The Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization (the Commission) with its headquarters in Vienna is the International Organization mandated to establish the global verification system foreseen under the Comprehensive Nuclear-Test-Ban Treaty (CTBT), which is the Treaty banning any nuclear weapon test explosion or any other nuclear explosions. The Treaty provides for a global verification regime, including a network of 321 stations worldwide, a communication system, an International Data Centre and on-site inspections to monitor compliance with the Treaty.

This Request for Proposal (RFP) is for the provision of goods and services as described in the Terms of Reference (TOR).

Bidders may submit a Proposal for individual Lots or for both Lots.

The Proposal shall meet all requirements stated in this RFP. For this project, the Commission is seeking capabilities, which will ensure that the services are delivered and the tasks are accomplished expeditiously and at a reasonable cost.

2. Documents included in this RFP

This RFP consists of the following documents:

(a) Letter of Invitation
(b) These Instructions for Preparation and Submission of Proposals with its Attachment:
  - Attachment 1: Evaluation and Selection Method
  - Attachment 2: Procedure for Submission of Electronic Offers in 2 Sealed Files
(c) List of CTBTO Member States
(d) Statement of Confirmation
(e) Bidder's Statement
(f) Vendor Profile Form
(g) The Commission's Model Contract and its Annexes A – B:
  - The Commission's General Conditions of Contract (Annex A)
  - Lot 1 - Terms of Reference for PS33/IS46/RN59 (Annex B) and its Attachments:
    - Attachment 1: Design Documentation for fire alarm and security systems at PS33/IS46/RN59[1]
    - Attachment 2: Special Instructions for Contracts - IMS stations operated by the Special Monitoring Service of Ministry of Defence Russian Federation (SMS of MoD RF)
  - Lot 2 - Terms of Reference for PS36/IS44/RN61 (Annex B) with its Attachments:
    - Attachment 1: Design Documentation for for fire alarm and security systems at RN60
    - Attachment 2: Design Documentation for for fire alarm and security systems at PS36/IS44
    - Attachment 2: Special Instructions for Contracts - IMS stations operated by the SMS of MoD RF

[1] This document is in the Russian language as provided by SMS of MoD RF, however the associated Proposal and all communications with the Commission shall be in English.

Note: In the event of award, the Proposal will be incorporated as Annex C to the Contract(s).

3. Amendment of RFP Documents

At any time prior to the closing date for submission of Proposals, the Commission may, for any reason, modify the RFP documents by amendment. The Commission may consider extending the deadline in order to allow adequate time for considering the modifications in the preparation of the Proposal.

4. Language of the Proposal

The Proposal and all correspondence and documents relating to it shall be in English.

5. Format and Submission of the Proposal

The Proposal shall be typed, dated and signed by an official legally authorized to enter into contracts on behalf of your organization. The Proposal shall not contain any interlineation, erasures or overwriting except as necessary to correct errors, in which case such corrections shall be initialled by the authorized person(s) signing the Proposal.

The Proposal shall be prepared in **three separate pdf files**, one containing a Technical Proposal, one containing a Financial Proposal *with* prices, and one containing a Financial Proposal *without* prices.

No pricing/financial information shall be included in the Technical Proposal. Note however that a complete list of the items being offered (without the prices) shall be included in the Technical Section of the Proposal.

The Proposal shall be submitted electronically according to the attached "PROCEDURE FOR SUBMISSION OF ELECTRONIC OFFERS IN 2 SEALVED FILES" (please refer to Attachment 2).

The Proposal shall be received not later than the closing date indicated in the Letter of Invitation. The subject of the email shall contain the following:

NAME OF THE PROJECT: [Description indicated in Letter of Invitation]
CTBTO REFERENCE No.: [Description indicated in Letter of Invitation]

6. Request for Clarifications and Contacting the Commission

The Commission will issue clarifications if required. Bidders are requested to e-mail any questions pertaining to this RFP as soon as possible after receipt of the solicitation documents, but in any case, no later than 5 business days prior to the Closing Date. No requests for clarifications will be entertained after this time. Questions will only be accepted via e-mail and should be sent to:

E-mail:	procurement@ctbto.org
Subject:	Request for Clarifications re RFP No. 2023-0021/Apylov [LOT 1] [AND LOT 2] (Bidders to indicate as appropriate)

The Commission will make all reasonable efforts to issue the clarifications not later than 4 business days prior to the Closing Date.
Except in the case of responding to an RFP clarification, no bidder shall contact the Commission on any matter relating to the Proposal after its submission and until the award of the Contract. Any attempt to influence the Commission in its evaluation of the Proposal or the contract award decision may result in the rejection of the Proposal.

7. Eligible Goods and Services

The services and goods (if any) to be rendered under the Contract shall have their origin in the States Signatories of the Comprehensive Nuclear-Test-Ban Treaty (CTBT), the list of which is attached to this RFP. For purposes of this paragraph, "the origin" means the place from where the materials, goods and/or from which the services are supplied.

8. Type of Contract and Payment

The Commission wishes to engage a contractor for this project based on firm-fixed price in accordance with the attached Model Contract. The terms and conditions of payment for the work are described in Clause 12 of the attached Model Contract.

9. Preparation of the Proposal

The Proposal shall contain, but not necessarily be limited to, the information described below.

The Proposal shall be composed of the following separate parts:

I. **Technical Proposal**; and
II. **Financial Proposal**;
III. **Financial Proposal without prices**

providing, but not limited to, the following information:

PART I: TECHNICAL PROPOSAL

Section 1 – Statement of Confirmation, Bidder's Statement and Vendor Profile Form
The attached Statement of Confirmation, Bidder's Statement and Vendor Profile Form shall be duly signed and submitted together with the Proposal.

Section 2 – Eligibility, Qualifications and Capability of the bidder
Only Russian Suppliers are eligible to submit a Proposal under this RFP.

The Proposal shall include the following concerning the bidder's qualifications and capability:
(a) Copies of necessary licences allowing to conduct the Work;
(b) A statement that the capacity of the bidder, in terms of qualified manpower resources, is adequate to conduct the Work.

Section 3 – Scope of Work
The Proposal shall include a brief description on how the bidder will perform the Work and the overall plan for the execution of the tasks described in the Terms of Reference. The bidder shall furnish such description by providing a section-by-section response or comments to the Work Tasks, as described in the Terms of Reference.

The Proposal shall also provide any other relevant issue which the bidder would like to bring to the attention of the Commission, whether or not having cost implications. This shall include details of warranties/manufacturer's guaranties in respect to any items of the Station and/or equipment.

Any deviation from the Terms of Reference or other documents contained in the RFP shall be clearly stated and justified. The Commission reserves the right to accept or reject such deviations.

Section 4 – Point of Contact and Personnel

Point of Contact
The Proposal shall state the contact details and legal address (name, telephone and fax numbers, and e-mail address) of the person (point of contact) in your company dealing with this RFP.

Personnel
The Proposal shall include a list of capable and experienced personnel, including their function, duration of assignment, curriculum vitae of key personnel proposed to perform the Work.

Use of former Preparatory Commission for the CTBTO ("Commission") employees in the preparation of Quotations:

A bidder must not, in the absence of prior written approval from the Commission, permit a person to contribute to, or participate in, any process relating to the preparation of a Quotation or the procurement process if the person:

a. At any time during the 12 months immediately preceding the date of issue of the Solicitation was an official, agent, servant or employee of, or otherwise engaged by the Commission;
b. At any time during the 24 months immediately preceding the date of issue of the Solicitation was an employee of the Commission personally engaged, directly or indirectly, in the definition of the requirements, project or activity to which the Solicitation relates

Section 5 – Sub-Contractors
The Proposal shall include names, legal status, address and qualifications of subcontractor(s), if any, involved in the Project and the scope of the subcontracted services. You shall provide a statement that your organization shall be fully responsible for the performance of your sub-contractors. All sub-contractors shall be legally established in one of the CTBT states signatories.

Section 6 – Acceptance of Model Contract and its Annexes
The Proposal shall include a statement that the bidder has carefully reviewed the Model Contract, its Annexes, including General Conditions of Contract, and is in agreement with all its terms and conditions including the contract period. Any deviations may be a factor in the decision of a contract award.

The bidder shall provide the necessary information required for the preparation of the Contract, such as registered name and address of the organization, the name and position of the legal representative authorized to sign the contract on behalf of the organisation.

Section 7 – Time Schedule
The Proposal shall contain a bar chart indicating an estimation of the duration of the services, including the duration of each task required by the Terms of Reference. Delivery time shall be

indicated in weeks after receipt of an order and shall be firm from the submission of the Proposal until conclusion of the Contract.

Section 8 – Insurance
Insurance to be included in the Proposal must be for All Risk, covering 110% of the cost of the equipment proposed, and from the date/place of the shipment to the date/place the delivery is completed. The insurance shall be in the name of the supplier and the Commission. You are requested to confirm that you will provide this insurance coverage

PART II: FINANCIAL PROPOSAL

Section 1 – Total Price

The Financial Proposal shall be prepared in **United States Dollars or Euro** and shall breakdown, separately, the costs for each task required by the Terms of Reference.

A firm fixed price shall be quoted, providing a proper breakdown of the details for equipment, materials, supplies, remuneration and expenses, which are part of the total contract price, as referred in more details below. The remuneration shall include basic salaries, fees, overheads and other charges, which would be due to be paid in as much as they are levied in conclusion or implementation of the contract, specifying unit rate per hour/day/month of the personnel involved and total number of days. Overhead, fees or other charges included in the remuneration costs shall be quoted separately with a proper breakdown and justification of each charge.

Section 2 – Cost Breakdown
The Financial Proposal shall provide the detailed prices related to each Work task referred to in the Terms of Reference:

Design Documentation
(a) Cost of personnel (please provide the person-day rates, etc.) per each activity;
(b) Travel costs (if applicable - please provide the details);
(c) Documentation and Reporting;

Work Tasks
(d) Cost of equipment, materials and supplies (please provide the details and separate cost breakdown for each item)
(e) Cost of personnel (please provide the person-day rates, etc.) per each activity;
(f) Travel costs (if applicable - please provide the details);
(g) Documentation and Reporting;

Other Costs
(h) Any other costs (please provide explanation and separate cost breakdown for each item).

A proper cost breakdown, cost details, justifications and explanations of each of the cost items would enable the Commission to evaluate the Proposal promptly and proceed with less requests for clarifications/justifications in a later stage. This is also a factor influencing the decision for contract award.

Section 3 – Taxes
In principle the Commission is exempt from taxes. **"Taxes"** means all direct and indirect taxes (including value added tax, general sales tax or goods and services tax), assessments, fees, customs duties, liens and charges in as much as they are levied in conclusion or implementation of the contract, including customs restrictions and charges of similar nature in respect of articles

imported or exported for the Commission's official use.

Due to the Facility Agreement concluded between the Commission and the Government of Russian Federation on 22 March 2005 which entered into force on 27 December 2006, the Commission is exempt from payment of indirect taxes and customs duties. Additionally, the Joint Executive Order No. 2872/36H dated 29 February 2012, registered by the Ministry of Foreign Affairs and the Ministry of Finance of the Russian Federation, includes the Commission as part of the list of international organizations and their agencies which carry out activities on Russian Federation territory free of value added tax.

10. Completeness and Correctness of the Proposal

The Commission reserves the right to verify all information furnished by you in the Proposal through a source of its choice. Any inaccurate information so given may lead to the rejection of the Proposal.

11. Validity of the Proposal

The Proposal shall be valid for 90 (ninety) days after the deadline for its submission to the Commission, unless an extension of validity has been requested by the Commission.

12. Correction of Errors

The Commission will check the Proposal for any arithmetic errors. If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected.

13. Evaluation of Proposals

(d) The Commission will first conduct a technical evaluation based on the criteria specified in Attachment 1 (Evaluation and Selection Method). The Technical Proposals for each Lot will be evaluated separately.

(e) If the Proposal fails to meet the minimum technical requirements for any one criterion, the entire Proposal will not be considered further. Only the Financial Proposals of those bidders that meet or exceed the minimum technical requirements of all items will be opened and evaluated for its commercial acceptability and to determine the financial score for each responsive bidder in accordance with Attachment 1. The Commission will evaluate the following:

(i) Financial acceptability;
(ii) Contractual compliance.

14. Negotiations of the Proposal and Award

The Commission reserves the right to request clarifications on the Proposal and to enter into negotiations regarding technical or commercial aspects of the Proposal before awarding the contract under this RFP.

The Commission also reserves the right, as it deems appropriate, to award to a single bidder, to award to multiple bidders in any combination or not to award to any of the bidders as a result of this RFP.

15. Modification and Withdrawal of the Proposal

Bidders may modify or withdraw their Proposals after their submission, provided that written notice of the modification or withdrawal is received by the Commission by the closing date for the submission of the Proposal. The Proposal may not be modified subsequent to the closing date.

16. The Commission's Right to Reject the Proposal

The Commission reserves the right to accept or reject the Proposal or to annul this procurement process at any time prior to the award of contract without having to inform the bidders of the grounds therefore, without thereby incurring any liability to the bidders.

17. Costs of preparation and submission of the Proposal

Bidders shall bear all the costs associated with the preparation and submission of their Proposal and the Commission will not be responsible or liable for those costs, regardless of the outcome of this RFP.

18. Proprietary Information

All documentation and information contained in this RFP are proprietary to the Commission and shall not be duplicated, used or disclosed -in whole or in part- for any purpose other than to evaluate them and respond to the Commission's request for Proposal or otherwise without prior written agreement of the Commission.

Attachment 1

EVALUATION AND SELECTION METHOD- RFP: 2023-0021

(Lot 1 and Lot 2)

TABLE 1			
Eligibility criteria			
The Bidder is a Russian supplier			**PASS/FAIL**
Only offers of bidders meeting the above eligibility criterion will be considered for the next stage of the evaluation (quality evaluation/scoring)			
Technical Evaluation Criteria	**Max Points**	**Weight Factor**	**Max Obtained Score**
Column 1	***Column 2***	***Column 3***	***Column 4***
1. Supplier's qualification (sub-paragraph 3.1 of TOR)	5	1	5
2. Understanding of Scope of Work, preparation of required documentation (sub-paragraphs 2.1 – 2.7 of TOR) and life expectancy (sub-paragraph 3.2 of TOR)	5	1	5
3. Ability to acceptably complete Work Task 1 (Section 2 of TOR)	5	2	10
4. Ability to acceptably complete Work Task 2 (Section 2 of TOR)	5	2	10
5. Ability to acceptably complete Work Task 3 (Section 2 of TOR)	5	2	10
6. Ability to acceptably complete Work Task 4 (Section 2 of TOR)	5	2	10
7. Ability to acceptably complete Work Task 5 (Section 2 of TOR)	5	2	10
8. Ability to acceptably complete Work Task 6 (Section 2 of TOR)	5	2	10
9. Ability to acceptably complete Work Task 7 (Section 2 of TOR)	5	2	10
10. Reporting requirements (Section 5 of TOR)	5	2	10
11. Acceptable delivery time (sub-paragraph 3.3 of TOR)	5	2	10
Total Obtained Points	**55**		**100**
Technical Evaluation Score		Obtained score*70%	

Points (column 2) will be awarded to Technical Proposal against each the technical evaluation criteria (column 1) of Table 1 in accordance with Table 2 below.

The minimum "technically acceptable Proposal" is the Technical Proposal, which has obtained minimum 3 points against each technical evaluation criteria. It should be noted that if a Technical Proposal obtains less than 2 points for any technical evaluation criteria, this Proposal shall be considered as "not technically acceptable proposal", which does not meet the minimum technical requirements and the Bidder will be excluded from the evaluation process.

A Technical Proposal, which meets the minimum evaluation criteria and in some area(s) has exceeded minimum requirements, will be assigned additional points, up to 5 points. Upon finalization of the technical evaluation, all technical scores at the technical evaluation stage will be converted according to 70% weight for technical part of evaluation.

TABLE 2	
Scoring	**Points**
Does not meet the minimum technical, functional, or performance related criterion. Response incomplete, inadequate and/or non-responsive to the criterion. Bidder does not clearly understand the requirement.	1
Meets the criterion in *most* areas but is lacking details and responsiveness in some areas of the requirement.	2
Meets the minimum acceptable requirements in all areas.	3
Meets the minimum acceptable requirements in all areas and exceeds it in some areas.	4
Technical Proposal exceeds the minimum level of requirements in all areas and adds additional technical, functional and performance related value to the proposed equipment, services or work.	5

TABLE 3
Subject to the compliancy of the Technical Proposal to the minimum technical requirements based on the technical evaluation criteria, the Financial Proposal shall be evaluated in accordance with the formula given below: $X = Y/Z * 30$ Legend X = Score of the Financial Proposal Y = Price of the lowest priced offer, which is "technically acceptable offer" Z = Price of the financial offer being evaluated

TABLE 4
The Contract will be awarded to the Bidder, whose Proposal obtains the “highest total combined score” resulting from the technical and financial evaluation: **Total Combined Score = Technical Evaluation Score + Financial Score** The weight of the technical and evaluation components is 70% and 30% respectively.
The Commission expects all bidders to accept the Commission’s Model Contract and General Conditions of Contract in full. Any deviation submitted by the bidders to the provisions of these documents may be a factor in the Commission’s contract award decision.

Attachment 2

"Procedure for Submission of Electronic Offers in 2 Sealed Files"

The Commission invites you to submit your sealed offer (Bid or Proposal) in response to the solicitation forming part of this request.

Please be sure to follow the instructions below very carefully, so that the documents you submit are encrypted, and cannot be opened without an encryption key (password). If the documents are not encrypted, they will not be accepted as part of this tender process.

CRITICAL INFORMATION:

Create separate zip files for the technical offer and financial offer (labeling them clearly in the title) with different encryption keys. Instructions for how to do this are provided below.

Step 1: You provide the encryption key (password) for the *Technical Offer only* (in accordance with the below instructions)!

Step 2: After the Commission has performed the evaluation of the Technical Offer, if your Technical Offer is considered to be acceptable, the Commission will request the encryption key (password) for the Financial Offer you have already submitted by the tender Deadline.

Should you have any questions, please send an email to procurement@ctbto.org.

We recommend that you leave yourself plenty of time to complete the below process (including getting any necessary assistance from the Commission), as late offer will not be accepted.

INSTRUCTIONS:

1. In a **WINDOWS** environment, one way of meeting the requirements is as follows.

   We recommend using the open-source, free software **7-zip**, but if you are comfortable with other tools, the result should be the same, as long as you can apply encryption to the archive. In the below, we'll use 7-zip as an example.
   (You can download the 7-zip code for Windows at: 7-zip.org)

2. In **LINUX** environment, you can use, for instance, "sha1sum" on the command line.

Creating the archives for submission

Regardless of whether the offer is a single file, or a collection of files, the files are easier to manage if delivered as a single, compressed file. Compressing the archive is a common way to meet size limitations in email systems.

As an example of how to submit your offer in the required format: assuming you are supplier "SOFTCOMP" and have the following files related to the offer for "RFP 2020-0010/EDWALD". *(You will need to replace these elements with the real information for your actual offer in line with the relevant Instructions for Preparation and Submission of Proposals/Bids.)* Assuming further that you have installed the 7-zip software on the Windows system you are using.

We will only go through the creation of the Technical Offer (Proposal/Bid) component; the Financial Offer (Proposal/Bid) component is similar.

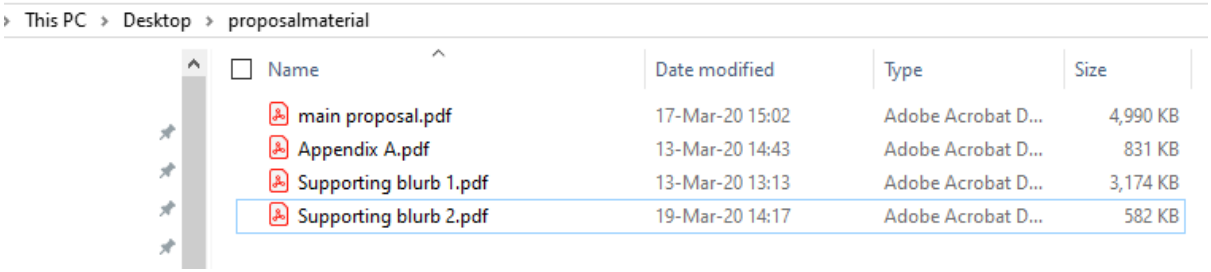

Figure 11 An example set of files to be submitted

Select the four files and right-click; a Dialog box pops up, with one of the options being "**7-ZIP >**". Hover your cursor over the " **>**" part and a few more options appear, select the "**Add to archive**" option.

Another dialog box pops up (see 'Figure 2, *Creating an Archive*', next page):

Using the standard Windows methods, select a suitable location for the archive (if you don't change it, the archive gets created right where the selected files are), and give it a name in the form of: "SOFTCOMP-2020-0010-EDWALD-TECHNICAL-BID", of course replacing all the elements with the true values for the offer in question: the actual company indicator, and the actual RFP/ITB identification string. Note that it is not possible to put a slash "/" in the filnename, and therefore put a dash "-" instead. Leave the file extension ".zip' as is.

Leave all the other settings as is, except: **add a password to the encryption** (see figure 2 below). This is done by typing the same password (of your choosing) twice in the two text fields in the lower right hand corner.

Make a note of this password. You must choose different passwords for the two zip archives, that is, the Technical and the Financial Proposal/Bid.

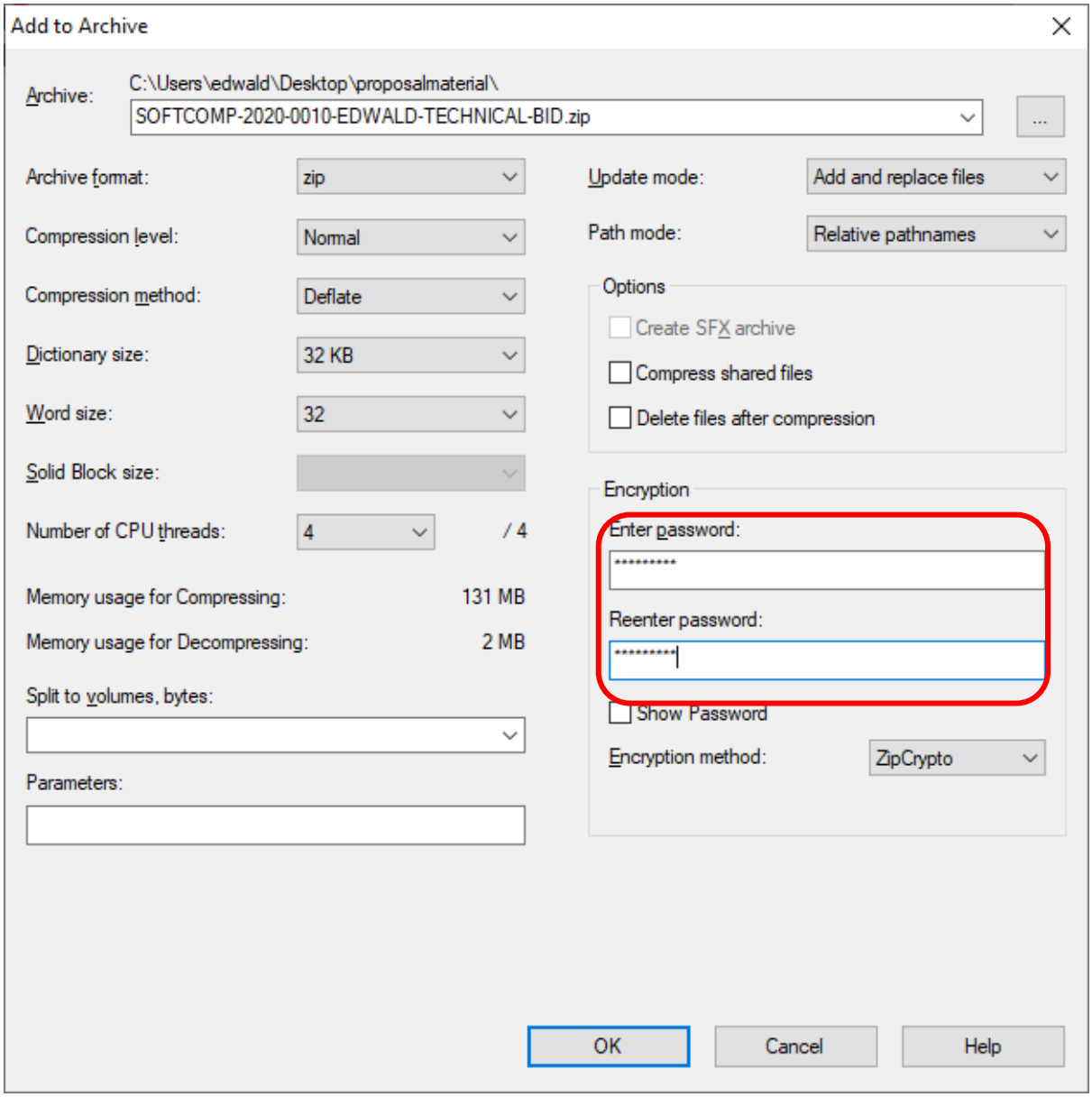

Figure 2 Creating an Archive

Now, we seek the "SHA1 Hash", and electronic fingerprint of the archive you have just created. The hash is a string calculated from your file(s) and can be used to guarantee that the file hasn't been modified since you created it. Any change to the file will result in a different hash value.

There are many ways of calculating this; two common options are decribed below.
If the appropriate functionality is available in your Windows environment: Select the compressed archive in the Windows file manager, (eg. SOFTCOMP-2020-0010-EDWALD-TECHNICAL-BID.zip) and right click. One of the options to select is "**CRC SHA >**". Hovering over the " **>**" brings a few more options to light, select the **SHA-1** option. A smaller dialog pops up: (see Figure 3, *SHA1* below). Clicking Ctrl-C grabs the contents of this box. You can close the box after copying the contents. (You can paste the contents into a mail message, for instance.)

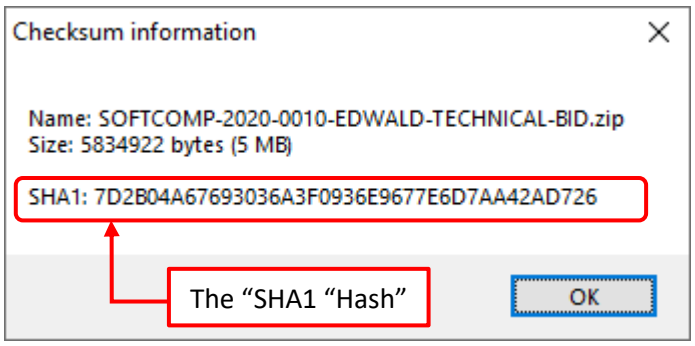

Figure 3 SHA1

If this CRC SHA function is not available by 'right-click' on your Windows version, you can also do this from 'the command line', a slightly more complicated way. Open a CMD window (see sidebar below), move to the folder where your archive is, and execute the command: "`certutil -hashfile SOFTCOMP-2020-0010-EDWALD-TECHNICAL-BID.zip sha1`" where you obviously replace the name of the file with your real file name. The output of this command is the SHA1 "hash". You can copy-and-paste the string for use in the email (below).

Sidebar: How to open a CMD window in Windows:

The way to open a Command window (or 'terminal') depends on the version of Windows you have. The different methods are very clearly described in the following article, but a quick internet search will find multiple descriptions.

https://www.lifewire.com/how-to-open-command-prompt-2618089

Finally,

1. Create a new email, Subject: example- "SOFTCOMP-2020-0010-EDWALD". Add the two compressed archives, that is, the Technical Offer and the Financial Offer archives as attachments. The text of the email should contain the SHA1 information for both archives. **SEND THIS TO:** sealed_bids@ctbto.org (note that there is an underscore "_" between "sealed" and "bids"). (Should the email become larger than your mail system allows, you can try sending the two archives in separate emails. Take care to include the right SHA1 information with each file.)

2. Create a new email, Subject: example- "SOFTCOMP-2020-2010-EDWALD-Technical Offer" the contents of which must contain the Encryption Key for the Technical Offer (the password you used when creating the Technical Offer). (Again, note the underscore between 'bid' and 'keys'.)
   SEND THIS TO: bid_keys@ctbto.org

   IMPORTANT NOTE: As stated above, only send the Encryption Key for the Technical Offer to the bid_keys@ctbto.org mailbox when sending your Technical and Financial Offer to the sealed_bids@ctbto.org mailbox. You shall only send the Encryption Key for the Financial Offer to the Commission if and when informed by the Commission that your Technical Offer had been evaluated as "technically acceptable".

The Financial Offer Encryption Key will need to be provided by you to the same e-mail (bid_keys@ctbto.org) within 48 hours of the Commission's request, clearly marked in Subject: Encryption Key for (example):"SOFTCOMP 2020-2010 EDWALD-Financial Offer". If your Offer is not considered "technically acceptable", the Commission will not request an Encryption Key for your Financial Offer, and it will remain unopened.

As mentioned above, should you have questions or difficulties, please send an e-mail to procurement@ctbto.org.

We recommend that you leave yourself plenty of time to complete the above process (including getting any necessary assistance from the Commission), as late offers will not be accepted.

STATEMENT OF CONFIRMATION

On behalf of (name of firm or organization):_____, I hereby attest and confirm that:

a) The firm/organization possesses the legal status and capacity to enter into legally binding contracts with the Commission for the supply of equipment, supplies, services or work.

b) The firm/organization is not insolvent, in receivership, bankrupt or being wound up, and not under administration by a court or a judicial officer, and that it is not subject to the suspension of its business or legal proceedings for any of the foregoing reasons.

c) The firm/organization has fulfilled all its obligations to pay taxes and social security contributions.

d) The firm/organization has not, and that its directors and officers have not, within the last five years been convicted of any criminal offense related to professional conduct or the making of false statements or misrepresentations as to their capacity or qualifications to enter into a procurement or supply contract.

e) The Commission, in the event that any of the foregoing should occur at a later time, will be duly informed thereof, and in any event, will have the right to disqualify the firm/organization from any further participation in procurement proceedings.

f) The firm/organization did not/will not attempt to influence any other bidder, organization, partnership or corporation to either submit or not submit a proposal/bid/quotation.

g) The firm/organization will not, in the absence of a written approval from the Commission, permit a person to contribute to, or participate in, any process relating to the preparation of a Quotation/Bid/ Proposal or the procurement process if the person:

   a. at any time during the 12 months immediately preceding the date of issue of the Solicitation was an official, agent, servant or employee of, or otherwise engaged by the Commission;
   b. at any time during the 24 months immediately preceding the date of issue of the Solicitation was an employee of the Commission personally engaged, directly or indirectly, in the definition of the requirements, project or activity to which the Solicitation relates.

h) Neither the organization/firm, its parent entities (if any), nor any of its subsidiary or affiliated entities (if any) have been identified on, or associated with any individual, groups, undertakings and entities identified on, the list established pursuant to the UN Security Council Resolution 1267 (Consolidated Sanctions List).[1]

i) Neither the organization/firm, its parent entities (if any), nor any of its subsidiary or affiliated entities (if any) are subject to any form of sanction imposed by an organization or body within the United Nations System, including the World Bank.

[1] The Consolidated United Nations Security Council Sanctions List can be found on the following website: **https://www.un.org/securitycouncil/content/un-sc-consolidated-list**

j) Neither the organization/firm, its parent entities (if any), nor any of its subsidiary or affiliated entities (if any), is engaged in any practice inconsistent with the rights set forth in the Convention on the Rights of the Child, including Article 32 thereof, which, inter alia, requires that a child shall be protected from performing any work that is likely to be hazardous or to interfere with the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral, or social development.

k) Neither the organization/firm, its parent entities (if any), nor any of its subsidiary or affiliated entities (if any) will use the funds received under contracts/purchase orders with the Commission to provide support to individuals, groups, undertakings or entities associated with terrorism.

l) The prices in the firm/organization's proposal/bid/quotation have been arrived at independently, without consultation, communication or agreement with any other interested companies, competitor or potential competitor with a view to restricting competition.

m) The Commission shall have the right to disqualify the firm/organization from participation in any further procurement proceedings, if it offers, gives or agrees to give, directly or indirectly, to any current or former staff member of the Commission a gratuity in any form, an offer of employment or any other thing of service or value, as an inducement with respect to an act or a decision of, or a procedure followed by, the Commission in connection with a procurement proceeding.

n) The Commission shall have the right to disqualify the firm/organization from participation in any further procurement proceedings if it does not disclose to the Commission any situation that may appear as a conflict of interest, and if it does not disclose to the Commission if any official or professional under contract with the Commission have an interest of any kind in the firm/organization's business or any kind of economic ties with the firm/organization.

o) The firm/organization expressly agrees to abide by the United Nations Supplier Code of Conduct.[1]

Name (print):_____ Signature: _____

Title/Position: _____

Place (City and Country):_____ Date: _____

[1] https://www.un.org/Depts/ptd/about-us/un-supplier-code-conduct

BIDDER'S STATEMENT

PLEASE FILL-IN & SUBMIT WITH THE PROPOSAL

Delivery Time:

Shipping weight (kg) and Volume (m^3) – if applicable:

List of recommended consumables and spares including prices and details on local availability, if applicable (please tick):

☐ For one-year period ☐ For a period of ……..

Warranty period applicable (it shall be for a **minimum of 24 months**, starting from the acceptance of the goods/services by the Commission) – please tick below:

☐ For a two-year period ☐ For a period of ……..

Availability of local service in Vienna, Austria (if any):

State country of origin or assembly of all items quoted:

Quantity discount and early payment discount (if any):

Include documentary evidence of qualifications to perform the order, which shall establish to the Commission's satisfaction that the bidder has the financial, technical and production capability necessary to perform the order in its entirety and to provide spare parts and other necessary on-going services as required.

Included in this quotation: **Yes** ☐ **No** ☐

Confirmation that the bidder has reviewed the Commission's Model License Agreement (if attached), the Commission's General Conditions for Goods (if attached), the Commission's General Conditions of Contract (if attached), Draft Contract (if attached), and the Special Conditions (if attached), and agreed to all terms and conditions.

Yes ☐ **No** ☐

Remarks:

With regards to the software provided with the equipment, state and confirm whether the software licenses are transferable to third parties, i.e. the Commission or the Commission's State Signatories (Member States).

Yes ☐ **No** ☐ **Not applicable** ☐

Remarks:

Name:

Name & Title of Contact Person:

Signature & date:

CTBTO Member States

Afghanistan
Albania
Algeria
Andorra
Angola
Antigua and Barbuda
Argentina
Armenia
Australia
Austria
Azerbaijan
Bahamas
Bahrain
Bangladesh
Barbados
Belarus
Belgium
Belize
Benin
Bolivia (Plurinational State of)
Bosnia and Herzegovina
Botswana
Brazil
Brunei Darussalam
Bulgaria
Burkina Faso
Burundi
Cambodia
Cameroon
Canada
Cabo Verde
Central African Republic
Chad
Chile
China
Colombia
Comoros
Congo
Cook Islands
Costa Rica
Cote d'Ivoire
Croatia
Cuba
Cyprus
Czech Republic
Democratic Republic of the Congo
Denmark
Djibouti
Dominica
Dominican Republic
Ecuador
Egypt
El Salvador
Equatorial Guinea
Eritrea
Estonia
Eswatini
Ethiopia
Fiji
Finland
France
Gabon
Gambia
Georgia
Germany
Ghana
Greece
Grenada
Guatemala
Guinea
Guinea-Bissau
Guyana
Haiti
Holy See
Honduras
Hungary
Iceland
Indonesia
Iran (Islamic Republic of)
Iraq
Ireland
Israel
Italy
Jamaica
Japan
Jordan
Kazakhstan
Kenya
Kiribati
Kuwait
Kyrgyzstan
Lao People's Democratic Republic
Latvia
Lebanon
Lesotho
Liberia
Libya
Liechtenstein
Lithuania
Luxembourg
Madagascar
Malawi
Malaysia
Maldives
Mali
Malta
Marshall Islands
Mauritania
Mexico
Micronesia, Federated States of
Monaco
Mongolia
Montenegro
Morocco
Mozambique
Myanmar
Namibia
Nauru
Nepal
Netherlands
New Zealand
Nicaragua
Niger
Nigeria
Niue
North Macedonia
Norway
Oman
Palau
Panama
Papua New Guinea
Paraguay
Peru
Philippines
Poland
Portugal
Qatar
Republic of Korea
Republic of Moldova
Romania
Russian Federation
Rwanda
Saint Kitts and Nevis
Saint Lucia
Saint Vincent and the Grenadines
Samoa
San Marino
Sao Tome and Principe
Senegal
Serbia
Seychelles
Sierra Leone
Singapore
Slovakia
Slovenia
Solomon Islands
South Africa
Spain
Sri Lanka
Sudan
Suriname
Sweden
Switzerland
Tajikistan
Thailand
Timor-Leste
Trinidad and Tobago
Togo
Tunisia
Türkiye
Turkmenistan
Tuvalu
Uganda
Ukraine
United Arab Emirates
United Kingdom
United Republic of Tanzania
United States of America
Uruguay
Uzbekistan
Vanuatu
Venezuela
Vietnam
Yemen
Zambia
Zimbabwe

VENDOR PROFILE FORM (VPF) – FOR PRODUCTS/SERVICES/WORK

1. Name of Company:	
2. Street Address:	3. Telephone:
P.O. Box: City:	4. E-Mail:
Zip Code: Country:	5. Website:
6. Contact Person:	Title:
7. Legal Status (e.g. Partnership, Private Limited Company, Government Institution)	
8. Year Established:	9. Number of Employees:
10. Gross Corporate Annual Turnover (US$m)*:	11. Annual Export Turnover (US$m)*:
12. Type of Business/Products: Manufacturer ☐ Sole Agent ☐ Supplier ☐ Other ☐ (please explain)	
13. Type of Business/Services/Work: Engineering ☐ Civil Work ☐ Governmental Institution ☐ Other ☐ (please explain)	
14. References (your main customers, country, year and technical field of products, services or work): **	
15. Previous Supply Contracts with United Nations Organizations (over the last 3 years)** Organization: Value in US$ Equivalent: Year: Organization: Value in US$ Equivalent: Year:	
16. Summary of any changes in your company's ownership during the last 5 years:	

* Please provide a copy of the most recent audited annual report and accounts. Note: Export includes services or work performed abroad or for foreign clients.
** Please provide supplementary documentation on these items.

17. List of Products/Services/Work offered:

Product/Service/Work #	Product/Service/Work Description

18. This section shall be **signed and stamped** by an official legally authorized to enter into contracts on behalf of your organization:

Name: Title: Signature: Date:

Bank Details	**Beneficiary Details**
Bank Name: Bank Address: Exact Account Holder Name:	Beneficiary Name: (exactly as stated on bank statements) IBAN: (if applicable) Account number: SWIFT/BIC: ABA/Sort Code:

Additional Details (if applicable)

Correspondent bank:

Correspondent account number:

Correspondent SWIFT/BIC:

Tax Identification Number:

FOR CTBTO USE ONLY		
Evaluated By:	Initials	Date:
Updated By:	Initials	Date:
Remarks:		

* Please provide a copy of the most recent audited annual report and accounts. Note: Export includes services or work performed abroad or for foreign clients.
** Please provide supplementary documentation on these items.

CTBTO PREPARATORY COMMISSION | preparatory commission for the comprehensive nuclear-test-ban treaty organization

MODEL CONTRACT

(SAP: _____)

between

THE PREPARATORY COMMISSION

FOR THE COMPREHENSIVE NUCLEAR-TEST-BAN TREATY

ORGANIZATION

and

_____

for

UPGRADE OF FIRE ALARM AND SAFEGUARDING SYSTEMS OF THE IMS STATIONS _____ _____, THE RUSSIAN FEDERATION

This Contract comprises this cover page, a table of contents, 8 (eight) pages of text, a signatories page, a List of Annexes and 3 (three) Annexes (A to C)

_____ 2023

TABLE OF CONTENTS

MODEL CONTRACT

This Contract is entered into between the **PREPARATORY COMMISSION FOR THE COMPREHENSIVE NUCLEAR-TEST-BAN TREATY ORGANIZATION** (hereinafter referred to as the "**Commission**"), having its office located at Wagramer Strasse 5, A-1400 Vienna, Austria, and (hereinafter referred to as the **"Contractor"**), having its registered office located at _____, hereinafter, the Commission and the Contractor are collectively referred to as the **"Parties"** and individually as a **"Party"**.

WHEREAS, the Commission has the responsibility to take all the necessary measures for the establishment of the International Monitoring System (hereinafter referred to as the **"IMS"**) under the Comprehensive Nuclear-Test-Ban Treaty (hereinafter referred to as the **"Treaty"**);

WHEREAS, the Russian Federation signed the Treaty on 24 September 1996 and ratified it on 30 June 2000;

WHEREAS, the Russian Federation signed the Facility Agreement on Conduct of Activities relating to Facilities of the IMS provided by the Treaty (hereinafter referred to as the **"Facility Agreement"**) on 22 March 2005 and ratified it on 27 December 2006;

Whereas, Joint Executive Order No. 3913/19n dated 24 March 2014 of the Ministry of Foreign Affairs and the Ministry of Finance of the Russian Federation (Order No. 3913/19n) includes the Commission in the list of the international organizations and their agencies, whose activities on the territory of the Russian Federation shall be free from value added tax;

Whereas, in accordance with Articles 4, 10 and 13 of the Facility Agreement and Federal Law No. 95 FZ of the Russian Federation "About grants (technical assistance)" dated 4 May 1999, the goods and the services supplied under contracts with the Commission shall be exempt from taxes or similar duties levied by the Russian Federation and are bestowed as a part of the technical assistance provided by the Commission for the ownership of the Russian Federation under the Treaty;

Whereas, on behalf of the Russian Federation, the Ministry of Defense of the Russian Federation is the beneficiary of the technical assistance;

Whereas, the Ministry of Defense of the Russian Federation is assigned to operate the stations of the IMS in the Russian Federation under a contract for post-certification activities with respect to the IMS stations located in the territory of the Russian Federation (Contract No. 2006-1251) concluded with the Commission;

Whereas, the Commission has selected a contractor to upgrade the fire alarm and safeguarding systems of the seismic station ___, of the infrasound station ____ and of the radionuclide station ____, _____, the Russian Federation, and the Ministry of Defense has agreed to provide an access to the station to the Contractor;

WHEREAS, the Contractor represents that it is ready, willing and able to provide such goods and services.

NOW, THEREFORE, the Parties mutually agree as follows:

1. DEFINITIONS

In this Contract, words and expressions shall have the same meanings as respectively assigned to them in the General Conditions of Contract and the Terms of Reference. In addition, the following words and expressions shall have the meanings hereby assigned to them:

"Annex A" means the Commission's General Conditions of Contract.

"Annex B" means the Commission's Terms of Reference.

"Annex C" means the Contractor's Proposal (Technical and Financial Proposals dated ____).

"Contract" means this document, its Annexes and any further modifications or such further documents as may be expressly incorporated in this Contract by the Parties in accordance with Clause 20 below.

"Contractor" means the legal entity named in the preamble of this Contract or its successors. The Contractor shall be the only interface for all matters pertaining to execution of the work under this Contract.

"Party(ies)" means the Commission and/or the Contractor, as the context requires.

"**Rule(s)"** means any regulation(s), official directive(s), ordinance(s), guideline(s), customs and practices.

"Taxes" means all direct and indirect taxes (including value added tax, general sales tax or goods and services tax), assessments, fees, customs duties, liens and charges in as much as they are levied in conclusion or implementation of the Contract, including customs restrictions and charges of similar nature in respect of articles imported or exported for the Commission's official use.

"Work" means the goods and services to be provided by the Contractor for the performance of the Tasks(s), including as the case may be, but not limited to, the design, drawings, technical specifications, site preparation and construction, supply and installation of the Contractor's Equipment, its spare parts and supplies, installation of the Commission's Equipment, provision of the installation support to the Commission and the Commission's Equipment Suppliers and any other goods, and the services to be provided by the Contractor or its subcontractors, as applicable for each Task, in order to fulfil the Contractor's obligations in accordance with this Contract, and the remedying of any defects therein

2. AIM OF THE CONTRACT

The aim of this Contract is to upgrade the fire alarm and safeguarding systems of the seismic station ____, of the infrasound station _____ and of the radionuclide station ____, ____, the Russian Federation (hereinafter referred to as the "Work") for the Commission.

3. ENTRY INTO FORCE AND DURATION OF THE CONTRACT

This Contract shall enter into force upon the date of the last signature by the authorized representatives of the Parties (hereinafter referred to as the "Effective Date") and it shall remain in force until the Parties fulfill all their obligations hereunder.

4. COMMENCEMENT AND COMPLETION OF THE WORK

The Contractor shall commence the Work on the Effective Date. The Work shall be completed not later than _____.

5. STANDARD OF WORK

The Contractor shall furnish the highest skill and judgement and cooperate with the Commission, including all the Commission's consultants and agents, in best furthering the interests of the Commission and the aim of this Contract. The Contractor shall provide efficient business administration and supervision, and perform the Work in the best way and in the most expeditious and economical manner consistent with the requirements set forth in this Contract.

6. RESPONSIBILITIES OF THE CONTRACTOR

(a) The Contractor shall complete the Work in accordance with Annexes B and C.

(b) The Contractor shall provide qualified English-speaking personnel as necessary to perform the Work under this Contract. The key persons shall be available for possible tasks related to the Work throughout the duration of the Contract period. Any replacement of the key personnel shall be made in accordance with Clause 7 of Annex A.

7. WARRANTY

The provisions of Clause 28 of Annex A shall apply to the Work performed by the Contractor.

8. PERMITS, NOTICES, LAWS AND ORDINANCES

(a) The Contractor shall obtain and pay for all permits and inspections necessary for the proper execution and completion of the Work that are customarily obtained upon execution of this Contract and that are legally required at the time the Proposal is received by the Commission.

(b) The Contractor shall give all notices required by the nature of the Work.

(c) If the Contractor notices that the Work or any part thereof required under this Contract is not in accordance with applicable laws and Rules, or with technical or safety standards, it shall promptly notify the Commission thereof in writing.

9. PROTECTION OF PERSONS AND PROPERTY

(a) The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programmes in connection with the Work.

(b) The Contractor shall take all reasonable precautions for the safety of, and shall provide all reasonable protection to prevent damage, injury and loss to:

(i) all employees on the Commission's premises and all other persons who may be affected thereby;

(ii) all the Work, Equipment, its spare parts, materials and supplies to be incorporated therein, whether in storage on or off the Commission's premises, which are under the care, custody or control of the Contractor or any of its subcontractors; and

(iii) other property on the Commission's premises or adjacent thereto.

(c) The Contractor shall give all notices and comply with all applicable laws and Rules bearing on the safety of persons and property and/or their protection from damage, injury and loss.

(d) The Contractor shall erect and maintain, as required by existing conditions and progress of the Work, all reasonable safeguards for the safety and protection of persons and property, including posting danger signs and other warnings against hazards and promulgating safety regulations.

(e) When the use or storage of combustible, explosive or other hazardous materials is necessary for the execution of the Work, the Contractor shall exercise the utmost care and shall carry on such activities under the supervision of properly qualified personnel.

(f) The Contractor shall be responsible for the prevention of accidents on the Commission's premises during the execution of the Work.

(g) In any emergency affecting the safety of persons or property, the Contractor shall promptly act to prevent threatened damage, injury and loss.

(h) The Contractor shall promptly remedy all damage and loss to any property, referred to in sub-Clause (b) above, caused in whole or in part by the Contractor, any subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable and for which the Contractor is responsible under sub-Clause (b) above, except damage and loss attributable to the acts or omissions of the Commission or anyone directly or indirectly employed by it, or of anyone for whose acts the Commission may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to its obligations under Clause 9 of Annex A.

10. RESPONSIBILITIES OF THE COMMISSION

The Commission shall designate members of its staff to act as points of contact for the Contractor to ensure that the Work are carried out in accordance with Annexes B and C and shall promptly notify the Contractor thereof. The Commission shall respond promptly to requests for information by the Contractor regarding the Work.

11. CONTRACT PRICE

(a) The Commission shall pay to the Contractor, in consideration of the full and proper performance of its obligations under the Contract, a firm fixed price of _____ hereinafter referred to as the **"Contract Price"**.

(b) The Contract Price shall cover all costs and expenses, excluding Taxes, incurred by the Contractor for the full and proper performance of all obligations under the Contract (including travel, allowances, management and remuneration of the personnel, national income tax, medical insurance, and social security contributions). It also includes work performed by the Contractor's personnel outside the Commission's normal working hours.

(c) The Contract Price shall be firm and fixed and shall not be subject to escalation. The Contractor shall not do any work, provide any materials or equipment, or perform any services which may result in any charges to the Commission over and above the Contract Price without the prior written consent of the Commission and a formal written amendment to this Contract.

(d) No Taxes are applicable under this Contract.

12. PAYMENT

(a) The Contract Price shall be paid in accordance with the following payment schedule and subject to the following conditions:

(i) Upon acceptance by the Commission of Design Documentation and Purchase Report/Revised Design Documentation and Purchase Report, as referred to in Section 5.1 of Annex B, the Commission shall pay the Contractor the amount of _____;

(ii) Upon acceptance by the Commission of Final Report/Revised Final Report, as referred to in Section 5.2 of Annex B, the Commission shall pay the Contractor the amount of _____.

(b) The Commission shall make the payments to the Contractor on the basis of an invoice submitted by the Contractor as per sub-Clause 12 (d) below. All payments shall be made within 30 (thirty) days of the receipt and acceptance of the invoice, provided that the Work has been satisfactorily completed and has been accepted by the Commission.

(c) The making of any payment hereunder by the Commission shall not be construed as an unconditional acceptance by the Commission of the Work accomplished by the Contractor up to the time of such payment.

(d) The Contractor shall submit an invoice in 1 (one) original and 2 (two) copies or electronically, from the Contractor's official e-mail address in PDF format, duly signed and sealed by the Contractor and submitted to the Commission's email address specified in Clause 21 below. Each invoice shall contain the Contract number (CTBTO and SAP numbers), detailed banking instructions, including the name and address of the Contractor's bank, account number, account holder's name and SWIFT, IBAN and/or ABA codes for payment by electronic transfer. All bank charges and fees of the Contractor's bank, including its correspondent banks, shall be borne by the Contractor.

13. TEMPORARY SUSPENSION OF WORK

The Commission may, at any time, temporarily suspend the Work, in whole or in part, being performed by the Contractor under this Contract by giving 30 (thirty) days' advance notice in writing to the Contractor. The Work so suspended shall be resumed by the Contractor on the basis of a revised time schedule and on terms and conditions to be mutually agreed upon between the Parties.

14. DELAYS AND EXTENSION OF TIME

(a) If the Contractor is delayed at any time in the progress of the Work by any act or omission of the Commission or by any of its employees, or by any other contractor employed by the Commission, or by changes in the Work ordered by the Commission, or by any causes beyond the Contractor's reasonable control, or by any other cause which the Commission determines may justify the delay, then the time for completion of the Work shall be extended by an amendment to this Contract in accordance with Clause 20 below for such reasonable time as the Commission may determine.

(b) Any request for extension of the time for reasons referred to in sub-Clause 14 (a) above shall be submitted to the Commission not later than 20 (twenty) days after the commencement of the delay, otherwise said request shall be deemed to be waived. Such request shall state grounds for the delay and shall provide an estimate of the probable effect of such delay on the progress of the Work.

15. CONTRACTOR'S CLAIMS AND REMEDIES

In no event shall the Contractor make any claim against the Commission for or be entitled to additional costs or compensation resulting from any delays in the progress or completion of the Work or any portion thereof, whether caused by the acts or omissions of the Commission, including, but not limited to, damages related to overheads, loss of productivity, acceleration due to delay and inefficiency. The Contractor's sole remedy in such event shall be an extension of time for completion of the Work, provided the Contractor otherwise meets the requirements and conditions set forth in this Contract.

16. ENTIRE AGREEMENT

This Contract represents the final agreement in respect of the Work and shall supersede all prior agreements and representations between the Parties in this respect. Annexes A to C shall constitute integral parts of this Contract and shall be of full force and effect.

17. DISCREPANCIES

If there are discrepancies or conflicts between any of the documents that are part of this Contract, the document to prevail shall be given precedence in the following order:

(i) this document;
(ii) the Commission's General Conditions of Contract (Annex A);
(iv) the Commission's Terms of Reference (Annex B);
(iv) the Contractor's Proposal (Annex C).

18. SEVERABILITY

If any term and/or provision of this Contract is or becomes invalid, illegal or unenforceable, the validity, legality and enforceability of the remaining provisions of this Contract shall not in any way be affected or impaired thereby.

19. NO WAIVER

Failure by a Party to enforce a right shall not be deemed to be a waiver of that right unless otherwise expressly provided in this Contract.

20. CONTRACT AMENDMENT

No modification of, or change in, this Contract, or waiver of any of its provisions, or additional contractual relationship with the Contractor shall be valid unless approved in the form of a written amendment to this Contract, signed by duly authorized Representatives of the Parties.

21. TRANSMISSION OF NOTICES AND OTHER DOCUMENTS

Notices, invoices, reports and other documentation under the Contract shall be delivered or sent to the relevant Party as follows (or to such person/title, address or email address as the Party may substitute by notice after the date of the Contract):

(a) The Commission:

For Contractual Issues:

Chief, Procurement Section
CTBTO, Vienna International Centre
Wagramerstrasse 5, P.O. Box 1200
1400 Vienna, Austria
Tel: + (43 1) 26030 6350
E-mail: procurement@ctbto.org

For invoices and related enquiries:

Accounts Payable
CTBTO Financial Services Section
Vienna International Centre
Wagramerstrasse 5, P.O. Box 1200
1400 Vienna, Austria
Tel: + (43 1) 26030 6292
E-mail: Payments@ctbto.org

(b) The Contractor:

_____
_____
_____

22. EFFECTIVENESS

(a) Except as provided below, any communication in connection with the Contract will be deemed to be given as follows:

(i) if delivered in person, at the time of delivery;
(ii) if by registered mail or courier, when received;
(iii) if by electronic communication, when retrievable by the Commission in document form.

(b) A communication given under sub-Clause 22 (a) above that is received or becomes retrievable on a non-working day or after business hours at the seat of the Commission will only be deemed to be given on the next working day of the Commission.

IN WITNESS hereof, the duly authorized Representatives of the Parties have executed this Contract:

For and on behalf of the **PREPARATORY COMMISSION FOR THE COMPREHENSIVE NUCLEAR-TEST-BAN TREATY ORGANIZATION:**

_____

_____

Date: _____ Place: Vienna, Austria

For and on behalf of **_____:**

_____

_____

Date: _____ Place: _____

LIST OF ANNEXES

ANNEX A: THE COMMISSION'S GENERAL CONDITIONS OF CONTRACT

ANNEX B: THE COMMISSION'S TERMS OF REFERENCE

ANNEX C: THE CONTRACTOR'S PROPOSAL

ANNEX A

CTBTO PREPARATORY COMMISSION | preparatory commission for the comprehensive nuclear-test-ban treaty organization

General Conditions of Contract

1. DEFINITIONS

(a) In these general conditions of contract the terms beginning with a capital letter shall have the meaning as defined in the Contract.
(b) "Services" means all services to be rendered under the Contract.
(c) "Goods" shall mean all goods, equipment, materials and/or other supplies to be provided under the Contract.
(d) "Taxes" shall mean all direct and indirect taxes (including value added tax, general sales tax or goods and services tax), assessments, fees, customs duties, liens and charges in as much as they are levied in conclusion or implementation of the Contract, including customs restrictions and charges of similar nature in respect of articles imported or exported for the Commission's official use.

2. LEGAL STATUS

The Contractor shall be considered as having the legal status of an independent contractor vis-à-vis the Commission. Neither the Contractor and any subcontractor, nor their personnel shall be considered to be an employee or an agent of the Commission.

3. ASSIGNMENT

The Contractor shall not assign, transfer, pledge or make other disposition of the Contract or any part thereof, or any of the Contractor's rights, claims or obligations under the Contract except with the prior written consent of the Commission.

4. SUBCONTRACTING

In the event the Contractor requires the services of one or more subcontractors, the Contractor shall obtain the prior written approval and clearance of the Commission for such subcontractor(s). The Commission's approval of a subcontractor shall not relieve the Contractor of any of his obligations under the Contract, and the terms of any subcontract shall be subject to and in conformity with the provisions of the Contract.

5. SOURCE OF INSTRUCTIONS

(a) The Contractor shall neither seek nor accept instructions from any authority external to the Commission in connection with the performance of its obligations under the Contract. The Contractor shall refrain from any action which may adversely affect the Commission and shall fulfil its commitments with the fullest regard to the interests of the Commission.
(b) While present at the Commission's premises, personnel of the Contractor shall, at all times, obey and conform to all requests and instructions of the Commission's officials and the United Nations Security Staff.

6. CONTRACTOR'S RESPONSIBILITY FOR EMPLOYEES

The Contractor shall be responsible for the professional and technical competence of its employees and will select, for the performance under the Contract, reliable individuals who will perform effectively in the implementation of the Contract, respect the local laws and customs and conform to a high standard of moral and ethical conduct.

7. ASSIGNMENT OF PERSONNEL

(a) The Contractor shall not replace or withdraw any personnel referred to in the Contract for the performance of the Services without the prior written approval of the Commission or unless requested by the Commission.
(b) Prior to assignment, replacement or withdrawal of personnel for the performance of the Services, the Contractor shall submit to the Commission for its consideration, the curriculum vitae or detailed justification to permit evaluation by the Commission of the impact which such assignment, replacement or withdrawal would have on the Services.
(c) In the event of withdrawal of personnel, all costs and additional expenses resulting from the replacement, for whatever reasons, of any of the Contractor's personnel shall be for the account of the Contractor. Such withdrawal shall not be considered as termination in part or in whole of the Contract.

8. CONFLICT OF INTEREST

No employee, officer, adviser, agent and/or subcontractor of the Contractor assigned to perform Services under the Contract shall engage, directly or indirectly, in any business, profession or occupation connected or related to the Services or Goods to be provided under the Contract if this constitutes a conflict of interest.

9. INSURANCES

(a) The Contractor shall provide and thereafter maintain appropriate insurance, or its equivalent, with respect to its employees to cover claims for personal injury or death in connection with the Contract.
(b) The Contractor shall provide and thereafter maintain insurance against all risk in respect of its property and any equipment used for the execution of the Contract.
(c) The Contractor shall also provide and thereafter maintain liability insurance in an adequate amount to cover third party claims for death, bodily injury, loss of and damage to property arising from any operations carried out by the Contractor in performing its obligations in connection with the Contract or from operation of any vehicles, boats, airplanes and other equipment owned or leased by the Contractor or its agents, servants, employees or subcontractors.
(d) Except for insurance mentioned in paragraph (a), the insurance policies under this clause shall:
  (i) Name the Commission as additional beneficiary;
  (ii) Include a waiver of subrogation of the Contractor's rights to the insurance carrier against the Commission.
(e) The Contractor shall, upon request, provide the Commission with satisfactory evidence of the insurance required under the Contract.
(f) Any amounts not insured, not recovered from or not claimed by the insurer shall be borne by the Contractor.
(g) Information concerning reduction of coverage shall be furnished by the Contractor to the Commission with at least thirty (30) days prior written notice.
(h) The Contractor undertakes that provisions to the same effect as the provisions in sub-clauses (a) through (c) above will be inserted in all subcontracts made in performance of the Contract, except sub-contracts exclusively for furnishing Goods.

10. ENCUMBRANCES/LIENS

The Contractor shall not cause or permit any lien, attachment or other encumbrance by any person to be placed on file in any public office or on file with the Commission against any monies due or to become due for any Services or Goods provided under the Contract, or by reason of any other claim or demand against the Contractor.

11. OBSERVANCE OF THE LAW

(a) The Contractor shall comply with all laws, ordinances, rules and regulations, including but not limited to health, environmental and labour laws bearing upon the performance of its obligations under the terms of the Contract.
(b) In particular, the Contractor shall comply with the labour laws of the country in which the Services or Goods are to be furnished providing for benefits covering injury or death in the course of employment.

12. CONFIDENTIALITY

(a) All technical, financial or other documentation and data the Contractor compiled for or received from the Commission under the Contract shall be treated as confidential and shall be delivered only to the Commission's authorized officials on completion of the Services or as requested by the Commission.
(b) Either Party acknowledges that all knowledge and information concerning the other Party that may be acquired in connection with the performance of its obligations under the Contract, including but not limited to, any information relating to its operations and procedures, are confidential and proprietary information of the other Party and it shall receive such confidential and proprietary information of the other Party in confidence and shall not disclose or permit disclosure of any such knowledge or information to any person and/or entity without the prior written consent of the other Party.
(c) The Contractor shall not, at any time, use such confidential information to its own advantage.
(d) The restrictions on confidentiality shall not apply to the information which:
  (i) presently is in the public domain;
  (ii) hereafter becomes part of the public domain without the other Party's fault;
  (iii) was in the possession of the other Party at the time of the disclosure, as shown by written evidence;
  (iv) is disclosed to the other Party at any time hereafter by a third Party.
  (v) is required to be disclosed to governing bodies, or to governmental authorities to the extent required by law or to obtain needed authorization to perform the Contract or pursuant to reporting requirements imposed by those governing bodies or the government of the State of the Contractor.
(e) These obligations do not lapse upon satisfactory completion of the Services, delivery of the Goods or termination of the Contract by the Commission.

13. LANGUAGES, WEIGHTS AND MEASURES

Unless otherwise specified in the Contract, the English language shall be used by the Contractor in all written communications to the Commission with respect to the Services or Goods to be provided and all documents procured or prepared by the Contractor. The Contractor shall use metric units, except when otherwise specified in the Contract.

14. PUBLICITY

(a) The Contractor shall not advertise or otherwise make public the fact that it is providing or has provided Services and Goods for the Commission. Also, the

Contractor shall not, in any manner whatsoever, use the name, emblem or official seal of the Commission or any abbreviation of the name of the Comprehensive Nuclear-Test-Ban Treaty Organization in connection with its business or otherwise.

(b) These obligations do not lapse upon satisfactory completion of the Services, delivery of the Goods or termination of the Contract.

15. OFFICIALS NOT TO BENEFIT/CONTINGENT FEES

(a) The Contractor warrants that:
   (i) No person or selling agency has been employed or retained by it to solicit or secure the Contract upon an agreement or understanding for a commission, percentage, brokerage, contingent fee or retainer, except regular employees or bona fide and officially established commercial or selling agencies maintained by the Contractor for the purpose of securing business;
   (ii) No official or servant or retired employee of the Commission who is not a regular employee of the Contractor, has been or shall be admitted by the Contractor to any direct or indirect benefit arising from the Contract or the award thereof.

(b) In case of breach by the Contractor of the warranties referred to in previous clauses, the Commission shall have the right to deduct from the Contract Price, or otherwise recover from the Contractor, the full amount of any such commission, percentage, brokerage, contingent fee or retainer so paid.

16. INTELLECTUAL PROPERTY AND OTHER PROPRIETARY RIGHTS

(a) Except to the extent the Contractor has granted a license to the Commission, the Commission, shall be entitled to all intellectual property, including but not limited to copyrights, patents and trademarks, with regard to products, documents or other materials which bear a direct relation to or are produced or collected under the Contract. The Contractor shall take all necessary steps, prepare and process all necessary documents and assist in securing such property rights and transferring them to the Commission and/or to the government where the Services or Goods are to be provided, in compliance with the requirements of the applicable law.

(b) The Contractor declares that it does not know of any intellectual property rights of third parties, which might be infringed in the execution of the Contract. Should, contrary to the Contractor's expectation, claims be raised against the Commission charging it with infringement of intellectual property rights, the Contractor shall hold harmless the Commission and shall indemnify it to the full extent of any damages or awards arising from such claims. This obligation of the Contractor shall continue to be in full force and effect up to the expiration of such intellectual property rights.

(c) The Commission shall give the Contractor due notice in writing of any charges of infringement brought against the Commission and of the filing of any suit for infringement of intellectual property rights of third parties due to the execution of the Contract, and, without prejudice to the immunity enjoyed by the Commission as an international organization from every form of legal process, including enforcement and execution, the Commission shall give the Contractor the opportunity to defend the Commission against the said suit at its discretion and shall not, without the Contractor's consent in writing, make any admission or consent to any claim of any third party, which might be prejudicial to the Contractor's position.

17. DEFAULT BY THE CONTRACTOR

(a) In case the Contractor fails to fulfil its obligations and responsibilities under the Contract and provided the Contractor has not remedied such failure(s) within thirty (30) days of having been given written notification by the Commission of the nature of the failure(s), the Commission may, at its entire discretion and without prejudice to its right to withhold payment(s), hold the Contractor in default under the Contract.

(b) When the Contractor is thus in default, the Commission may, by giving written notice to the Contractor, terminate the Contract as a whole or such part or parts thereof in respect of which the Contractor is in default. Upon such notice, the Commission shall have the right to seek completion, at the Contractor's expense, of that part or those parts of the Contract with respect to which the Contractor is in default.

(c) The Contractor shall, in this case, be solely responsible for any reasonable costs of completion of the Services and/or delivery of Goods, including such costs, which are incurred by the Commission over and above the originally agreed Contract Price.

18. WITHHOLDING OF PAYMENT

(a) The Commission may withhold any payment to the Contractor or, on account of subsequently discovered evidence, nullify the whole or part of any payment approval theretofore given, to such an extent as may be necessary to protect the Commission from loss under the Contract on account of:
   (i) The Contractor's failure to carry out its obligations or to make adequate progress with the obligations, except for failure arising out of force majeure;
   (ii) The Contractor's failure to remedy unsatisfactory performance, when such failure has been drawn to his attention by the Commission;
   (iii) The Contractor's failure to submit on time the reports required.

(b) The withholding by the Commission of any interim payment shall not affect the Contractor's obligation to continue performance of his obligations under the Contract.

(c) No interest shall accrue on payments eventually withheld by the Commission in application of the stipulations of this paragraph.

19. LIQUIDATED DAMAGES

Subject to Clause 20 below (force majeure), if the Contractor fails to deliver any or all of the Services and/or Goods within the latest time period(s) specified in the Contract, the Commission may, without prejudice to its other remedies under the Contract, deduct from the Contract Price as liquidated damages, a sum equivalent to 0.2 per cent of the portion of the Contract Price for the delayed Services and/or Goods for each working day of delay until actual performance, up to a maximum of sixty (60) working days. The recovery by the Commission of proven damages shall not be excluded.

20. FORCE MAJEURE

(a) Force majeure as used herein shall mean acts of God, industrial disturbances, acts of the public enemy, civil disturbances, explosions and any other similar cause of equivalent force not caused by nor within the control of either party and which neither party is able to overcome.

(b) As soon as possible after the occurrence of any cause constituting force majeure, the Contractor shall give notice and full particulars in writing to the Commission of such force majeure if the Contractor is thereby rendered unable, wholly or in part, to perform its obligations and meet its responsibilities under the Contract.

(c) In this event, the following provisions shall apply:

(i) The obligations and responsibilities of the Contractor under the Contract shall be suspended to the extent of its inability to perform them and for as long as such inability continues;

(ii) The term of the Contract shall be extended for a period equal to the period of suspension taking, however, into account any special conditions which may cause the time for completion of the obligations to be different from the period of suspension;

(iii) If the Contractor is rendered permanently unable, wholly or in part, by reason of force majeure to perform its obligations and meet its responsibilities under the Contract, the Commission shall have the right to terminate the Contract on the same terms and conditions as are provided for in the Termination Clause of the Contract, except that the period of notice may be seven (7) days instead of thirty (30) days;

iv) For the purpose of the preceding sub-clause, the Commission may consider the Contractor permanently unable to perform in case of any period of suspension in excess of ninety (90) days. Any such period of ninety (90) days or less shall be deemed temporary inability to perform.

21. INSOLVENCY AND BANKRUPTCY

Should the Contractor be insolvent, adjudged bankrupt, or should the Contractor make a general assignment for the benefit of its creditors, or should a receiver be appointed on account of the Contractor's insolvency, the Commission may, without prejudice to any other right or remedy it may have under the terms of the Contract, terminate the Contract forthwith by giving the Contractor written notice of such termination.

22. INDEMNIFICATION

The Contractor shall indemnify, hold and save harmless and defend at its own expense the Commission, its officers, agents, servants and employees from and against all suits, claims, demands and liability of any nature or kind, including cost and expenses arising out of acts or omissions of the Contractor or its employees or subcontractors in the performance of the Contract. This requirement shall extend, inter alia, to claims or liabilities in the nature of workers' compensation and to claims or liabilities pertaining to intellectual property rights. The obligations under this clause do not lapse upon termination of the Contract.

23. AMICABLE SETTLEMENT

The parties shall use their best efforts to settle amicably through negotiation any dispute, controversy or claim arising out of, or relating to, the Contract or the breach, termination or invalidity thereof. If the parties cannot reach such amicable settlement through negotiations, the matter shall first be referred to conciliation, by a request by either party for conciliation procedures. The conciliation shall take place in accordance with the United Nations Commission on International Trade Law (UNCITRAL) Conciliation Rules then prevailing, or according to such other procedure as may be agreed between the parties, within a time period of ninety (90) days. There shall be one conciliator. The conciliation shall be in Vienna, Austria, and it shall be conducted in the English language.

24. ARBITRATION

(a) In the event of a failure to reach an amicable settlement in accordance with Clause 23 above (Amicable Settlement), any dispute arising out of the interpretation or application of the terms of the Contract or any breach thereof shall be settled in accordance with the arbitration rules established by UNCITRAL as at present in force. The number of arbitrators shall be one. The arbitration shall be in Vienna, Austria, and it shall be conducted in the English language.

(b) The arbitrator shall take into account the internationally recognized general principles of commercial transactions. The arbitrator shall have no authority to award punitive damages, nor to award interest in excess of five (5) per cent, and any such interest shall be simple interest only. The parties shall be bound by any arbitration award rendered as a result of such arbitration as the final adjudication of any such dispute.

25. PRIVILEGES AND IMMUNITIES

Nothing in or relating to the Contract shall be deemed a waiver, express or implied, of any of the privileges and immunities of the Commission and its employees.

25(a). TAX EXEMPTION

In principle, the Commission is exempt from all Taxes. Since the arrangement under which such exemption is respected varies from country-to-country, the Contractor shall collaborate with the Commission to achieve Tax exemption at source or to pursue reimbursement of Taxes paid by the Commission, as the case may be.

26. TERMINATION

The Commission may terminate the Contract in whole or in part, and at any time, upon thirty (30) days' notice of termination to the Contractor. In the event such termination is not caused by the Contractor's negligence or fault, the Commission shall be liable to the Contractor for payment in respect of Services already satisfactory accomplished or Goods delivered and accepted and in conformity with the terms of the Contract, for necessary terminal expenses of the Contractor, and for the cost of such urgent work as is essential and as the Contractor is asked by the Commission to complete. The Contractor shall keep expenses at a minimum and shall not undertake any forward commitment from the date of receipt of the Commission's notice of termination.

27. GOODS

In the event that the Contract requires the Contractor to supply Goods, Clauses 28-35 shall apply in addition to the above.

28. WARRANTY

(a) The Contractor warrants that the Goods, including packaging, conform to the specifications for the Goods ordered under the Contract and are fit for the purpose for which such Goods are ordinarily used and for purposes expressly made known to the Contractor by the Commission, and are new and free from defects in design, workmanship and materials.
(b) This warranty shall remain valid for twenty-four (24) months after the Goods or any part thereof have been delivered and accepted, whichever is later, unless the Contractor has granted a longer period. Should the Commission transfer the title of the Goods to a third party during the warranty period, the right to enjoy the warranty shall be transferable to the new title-holder.
(c) If, during the warranty period mentioned in sub-clause (b) above, the Goods or any part thereof are found to be defective or not in conformity with the specifications under the Contract, the Contractor shall, upon notification, promptly and at its own expense correct all such defects and non-conformities. If these defects and non-conformities cannot be corrected, the Commission shall have the right, at the Contractor's expense, to either demand replacement of the defective item, or receive appropriate reimbursement, or have the defective item repaired or otherwise procured from a third party.

29. INSPECTIONS AND TESTS

(a) The Commission shall have the right to inspect and/or to test the Goods to confirm their conformity to the technical specifications. The technical specifications shall specify what inspections and tests the Commission requires.
(b) The inspections and tests may be conducted on the premises of the Contractor or its subcontractor(s), at a point of delivery designated by the Commission and/or at the Goods' final destination. The Contractor shall give all reasonable facilities and assistance-including drawings and production data-to the Commission at no charge to the Commission.
(c) Should any inspected or tested Goods fail to conform to the technical specifications, the Commission reserves the right to reject them and the Contractor shall either replace the rejected Goods or make all alterations necessary to meet specification requirements free of cost to the Commission.
(d) The Commission's right to inspect, test and, where necessary, reject the Goods after the Goods' arrival at the point of delivery designated by the Commission or at the Commission's offices, shall in no way be limited or waived by reason of the Goods' having previously been inspected, tested and passed by the Commission.
(e) Nothing in this Section on Inspections and Tests shall in any way release the Contractor from any warranty or other obligations under the Contract.
(f) All equipment/material supplied under the Contract may be subject to pre-shipment inspection by a third party to be specified by the Commission. The Contractor is not liable for cost of this inspection.

30. PACKING

The Contractor shall comply or ensure compliance with the following provisions concerning packing:

(a) The Goods shall be packed as is required to prevent their damage or deterioration during transit to their final destination. The packing shall be sufficient to withstand, without limitation, rough handling during transit.
(b) In the case of a cross-border shipment, the Goods shall have appropriate export packing. If necessary, all cases/crates must be wrapped inside with heavy-duty plastic lined paper, should be steel-strapped and must be able to withstand tough handling. Skids for truck handling are imperative if the gross weight is more than 30 kilograms.
(c) The consignment shall be marked and shipped as per address shown on the Purchase Order Form.
(d) Neither partial delivery nor transhipment shall be made unless specifically agreed by the Commission in writing.
(e) Each case/crate/package shall carry a consecutive number, dimensions, volume, and weight (i.e. Case No. X of Y cases, A x B x C cm, E m3, D Kg.) and shall be marked as follows:

EQUIPMENT FOR
THE PREPARATORY COMMISSION FOR THE
COMPREHENSIVE NUCLEAR-TEST-BAN
TREATY ORGANIZATION.
[point of delivery]

PURCHASE NO._____
GROSS WEIGHT _____
NET WEIGHT _____

(f) Markings shall be done with weatherproof materials. All non-containerized Goods shall be shipped below deck.
(g) Each case/crate/carton shall carry (outside) a copy of the packing list describing the contents of the case/crate/carton. Outside Case No. 1 should be attached with invoice covering the actual delivery. The accompanying papers must be made out in the English language.
(h) Prior to delivery, a fax (or a letter by courier service) shall be sent to the consignee, if any, advising of the following:
- purchase order/Contract number;
- waybill number or equivalent reference number of the shipment (if any);
- number of boxes/cartons/crates/etc.;
- estimated time of departure (ETD);
- point of departure and name of freight carrier;
- estimated time of arrival (ETA) to final destination.

(i) The following documents shall be enclosed with the shipment in case of shipping by air:
- airway bill;
- proforma or commercial invoice;
- packing list.

(j) The above documents are indispensable and must reach the consignee, if any, on time to permit customs clearance and in order to avoid demurrage charges.

31. DELIVERY AND TRANSPORTATION

(a) Delivery of the Goods shall be made by the Contractor in accordance with the terms specified in the Contract, and the Goods shall remain at the risk of the Contractor until delivery has been completed.
(b) Transport of the Goods to the port of discharge or such other point in the country of destination and/or forwarding to the consignee, if any, (door-to-door) specified in the Contract shall be arranged and paid for by the Contractor and the cost thereof shall be included in the Contract Price.

32. TAKE-OVER/HAND-OVER

Upon successful completion of delivery or of installation and a testing and evaluation period, as specified in the Contract, responsibility for the Goods will be handed over to the consignee or other designated entity.

33. EXPORT LICENCES

If an export licence or any other governmental authorization is required for the Goods, it shall be the obligation of the Contractor to obtain such licence or governmental authorization. In the event of failure to obtain such licence or authorization within reasonable time, the Commission may declare the Contract null and void.

34. SPARE PARTS

In accordance with the Contract, the Contractor may be required to provide any or all of the following materials and notifications pertaining to spare parts manufactured and/or distributed by the Contractor:

(a) Such spare parts as the Commission may choose to purchase from the Contractor, provided that the Contractor is not relieved of any warranty obligations under the Contract;
(b) In the event of termination of production of the spare after delivery of the Goods:
  (i) advance notification to the Commission of the pending termination, in sufficient time to permit the Commission to place a final order;
  (ii) following such termination, furnishing at no cost to the Commission, the blueprints, drawings and specifications of the spare parts, if and when requested.

35. UNITED NATIONS CONVENTION ON CONTRACTS FOR THE INTERNATIONAL SALE OF GOODS

Questions concerning matters arising under the Contract, but not settled in it, shall be settled in conformity with the United Nations Convention on Contracts for the International Sale of Goods (Vienna, 1980), which shall be applicable to the Contract. The applicable language version of the Convention shall be the version in which the Contract is written.

36. SUSTAINABLE BUSINESS PRACTICES

The Commission requires the Contractor and its personnel to:
(a) support and respect the protection of internationally proclaimed human rights[1] and to observe the highest standards of ethics and integrity throughout its supply chains.
(b) abide by the United Nations Supplier Code of Conduct[2].
(c) to take appropriate steps, whenever possible to perform its obligations in a manner that takes into account economic, environmental and social considerations.
(d) certify that they have not and will not engage in harassment or sexual harassment, proscribed practices or any further practice described in Clauses 37, 38, 39, 40

[1] UN Guiding Principles on Business and Human Rights, available at https://www.ohchr.org/Documents/Publications/GuidingPrinciplesBusinessHR_EN.pdf.

[2] Available at https://www.un.org/Depts/ptd/about-us/un-supplier-code-conduct.

and 41, during the procurement process and the performance of the Contract.

37. PREVENTION OF HARRASSMENT AND SEXUAL HARRASSMENT

(a) The Commission is committed to providing a professional work environment that upholds the highest standards of equality, respect and dignity for all. In this regard, and without limitation to any other provision contained herein:
   (i) The Contractor shall adhere to zero tolerance for harassment and therefore accepts and agrees to refrain from any conduct which could, in the view of the Commission, meet the definition of harassment and/or sexual harassment. For the avoidance of doubt, "harassment" shall be understood as any improper or unwelcome conduct that might reasonably be expected or be perceived to cause offence or humiliation to another person when such conduct interferes with work, is made a condition of employment, or creates an intimidating, hostile or offensive work environment. "Sexual harassment" shall be understood as harassment of a sexual nature, and the above definition of harassment applies equally to sexual harassment. Sexual harassment may occur between persons of opposite sex or of the same sex.
   (ii) The Contractor shall take all reasonable and appropriate measures to prevent and deter harassment and sexual harassment or abuse of anyone by its employees, agents, officials or any other persons engaged or controlled by the Contractor to perform the Services.
   (iii) The Contractor shall promptly report to the Commission any actual, reported or suspected cases of harassment, sexual harassment or abuse of anyone by its employees, agents, officials or any other persons engaged or controlled by the Contractor to perform the Services of which the Contractor becomes aware. Such reports to the Commission may be on a no name basis, if necessary.
   (iv) In addition to notifying the Commission pursuant to sub-clause (iii) above, on becoming aware of any allegation of harassment, sexual harassment or abuse of anyone, the Contractor shall take all reasonable and appropriate measures to address the matter, including engaging in good faith consultations with the Commission, while ensuring minimum impact and/or disruption of the Services.

(b) The Contractor acknowledges and agrees that any breach of the provisions of this Clause 37, as determined by the Commission, shall permit the Commission, at its sole discretion, to:
   (i) Request the Contractor to remove, temporarily or permanently, from the relevant assignment, any Contractor's personnel reported for having committed harassment, sexual harassment or abuse of anyone.
   (ii) Terminate the Contract, and/or any other agreement, arrangement or partnership concluded by the Commission with the Contractor, immediately upon written notice to the Contractor, without any liability for termination charges or any other liability of any kind, on the terms and conditions as are provided for in Clause 26 (Termination) above; and/or
   (iii) Exclude the Contractor from participating in any ongoing or future solicitations, and/or entering into any future contractual or collaborative relationships with the Commission and/or suspend the Contractor from the Commissions supplier roster.

(c) The Commission shall be entitled to report any breach of the provisions of this Clause 37, as determined by the Commission, to the Commission's governing bodies, other UN agencies and/or donors.

38. PROSCRIBED PRACTICES

The Commission requires that the Contractor and its personnel certify that they have not and will not engage in proscribed practices and proscribed conduct during the procurement process and the performance of the Contract. The Commission defines Proscribed Practices as follows:

Fraudulent practice: is any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation;

Corrupt practice is the offering, giving, receiving, or soliciting, directly or indirectly, anything of value to influence improperly the actions of another party;

Coercive practice is the impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of any party in order to influence the actions of that party;

Collusive practice is the proposing or entering into an arrangement between two or more parties designed to achieve an improper purpose, including influencing improperly the actions of another party**;**

Unethical practice is conduct or behaviour that is contrary to the conflict of interest, gifts and hospitality, post-employment provisions or other published requirements of doing business with the Commission;

Obstructive practice is any act which deliberately and in an effort to compromise an investigation, destroys, falsifies, alters or conceals information or documents that may be relevant to a fraud and corruption investigation, or material that could become evidence as a result of such investigation; or the making of false statements to investigators during such an investigation.

39. CHILD LABOUR

The Contractor represents and warrants that neither it, its parent entities (if any), nor any of the Contractor's subsidiary or affiliated entities (if any) is engaged in any practice inconsistent with the rights set forth in the Convention on the Rights of the Child, including Article 32 thereof, which, inter alia, requires that a child shall be

protected from performing any work that is likely to be hazardous or to interfere with the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral or social development.

40. MINES

The Contractor represents and warrants that neither it, its parent entities (if any), nor any of the Contractor's subsidiaries or affiliated entities (if any) is engaged in the sale or manufacture of anti-personnel mines or components utilized in the manufacture of anti-personnel mines.

41. TERRORISM

The Contractor shall ensure that none of the funds received from the Commission under the Contract are used, directly or indirectly, to provide support to individuals or entities subject to sanctions or other measures promulgated by the United Nations Security Council and appearing in the Consolidated United Nations Security Council Sanctions List. This provision shall be included in all subcontracts or sub-agreements entered into under the Contract.

42. FULL DISCLOSURE

(a) The Contractor will immediately notify the Commission upon becoming aware of any Proscribed Practices or other prohibited practices or conduct or suspicion thereof, as per Clauses 37-41, by itself or its personnel during the procurement process or the performance of the Contract. The Contractor will take all appropriate measures to prohibit and prevent its personnel from engaging in Proscribed Practices or any other prohibited conduct, as well as to investigate allegations thereof, or to take corrective action when such a Proscribed Practice or any other prohibited conduct has occurred.

(b) The Contractor further warrants that it is not the subject of any sanctions, or otherwise identified as ineligible by any government, supranational organization (e.g., European Union), another entity of the United Nations System or multilateral development finance institution. The Contractor will disclose to the Commission if it becomes subject to any sanction or temporary suspension during the term of the Contract. The Contractor recognizes that a breach of this provision constitutes a fraudulent practice.

43. DATA PROTECTION

(a) **Use of the Commission's data:** Use (including accessing, processing, retention, storage) of the Commission's data is limited to the purposes contained in the Contract and such use will be limited to Contractor's personnel on a "need to know" basis. Use of the Commission's data for internal research, marketing, sales, or promotional purposes is strictly prohibited. Subject to Clause 12 (Confidentiality), the Contractor will treat the Commission's data as confidential and may neither disclose it nor make it available to any third-party except with the prior written authorization of the Commission.

(b) **Compliance:** The Contractor confirms that it has a data protection policy in place that meets applicable legal requirements and that it will apply such a policy to the Commission's data, without prejudice to the privileges and immunities of the Commission. The Contractor will implement technical and organisational measures to ensure appropriate protection of the Commission's data, in conformity with the abovementioned requirements and internationally recognised standards and best practices. In addition, the Contractor will:
   (i) at its sole expense and risk, return, delete, or destroy all the Commission's data, including data backups, upon written instruction of the Commission. The Commission will provide a reasonable period of time and take into account the Contractor's legitimate interests, as well as the termination or expiration date of the Contract;
   (ii) process, retain or store the Commission's data exclusively in countries that are signatories to the Comprehensive Nuclear-Test-Ban Treaty and that ensure adequate legal protection of the Commission's privileges and immunities; and
   (iii) be liable for any resulting damages or penalties for its failure to comply with its obligations.

(c) **Data security:** Upon discovery of a data security breach, the Contractor will immediately notify the Commission and undertake at its sole expense to:
   (i) propose immediate remedial actions (including containment);
   (ii) implement, as directed by the Commission, all necessary damage mitigation and remedial actions;
   (iii) where applicable, as directed by the Commission, restore the Commission's and end-users' access; and
   (iv) keep the Commission informed of its progress.

(d) The Contractor, at its sole expense, will cooperate fully with any Commission investigation, remediation steps and response to a data security breach.

44. ESSENTIAL TERMS

The Contractor acknowledges and agrees that each of the provisions in Clauses 36 to 43 above constitutes an essential term of the Contract and that any breach of any of these provisions shall entitle the Commission to terminate the Contract or any other contract the Contractor has with the Commission, immediately upon notice to the Contractor, without any liability for termination charges or any other liability of any kind. Furthermore, the Commission is entitled to exclude the Contractor from participating in future tenders should the Contractor breach any of the provisions included in Clauses 36 to 43.

ANNEX B

TERMS OF REFERENCE

LOT 1

UPGRADE OF THE FIRE ALARM AND SAFEGUARDING SYSTEM OF THE IMS STATIONS PS33/IS46/RN59, ZALESOVO, THE RUSSIAN FEDERATION

TABLE OF CONTENTS

1. INTRODUCTION

The Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization (the "Commission") intends to engage a contractor (the "Contractor") to upgrade the fire alarm and safeguarding systems at the Central Recording Facility of the seismic station PS33, of the infrasound station IS46 and the premises of the radionuclide station RN59 (located in the neighboring building) (the "Station" or the "Stations"). The objective of this work (the "Work") is to install and operate fire alarm and automatic open fire fighting systems to ensure fire security at the Stations' facilities. The IMS PS33/IS46/RN59 Stations are located at the distance of 7 km to the south-east of the village of Zalesovo, Altai Region, the Russian Federation.

1.1 SMS

The Contractor shall be required to coordinate the Work with the SMS. The Special Monitoring Service (SMS) of the Ministry of Defence (MoD) has been designated by the Government of the Russian Federation as the sole national technical counterpart for coordinating activities related to liaison, establishment and upgrade of infrastructure, installation, testing and evaluation, certification and post-certification activities for all IMS primary and number of auxiliary seismic stations in the Russian Federation.

The Commission and the SMS of MoD RF have agreed that in this project the role and responsibilities of the SMS shall be to coordinate activities between the Commission and the Contractor for this Work, verify all documents related to the project, monitor, review and accept the reports and works for the upgrade of the fire alarm and safeguarding systems of the Stations, as well as to confirm that the works have been performed in conformance with the national and local rules and regulations.

2. SCOPE OF WORK

The Contractor shall ensure that the Work shall be performed with a high quality, in timely manner and at a reasonable cost in accordance with these Terms of Reference.

The Scope of Work includes:

2.1. Preparatory activities
2.2. Review and finalization of the design documentation by the Contractor;
2.3. Supply of equipment, materials and other supplies;
2.4. Dismantling and disposal of the existing fire alarm and safeguarding systems;
2.5. Installation and commissioning works;
2.6. Development of executive documentation and operational documentation for the submission to the SMS and Station personnel;
2.7. Cleaning and removal of debris and materials upon completion of the Work.

Work Task 1 – Preparatory activities

The Contractor shall perform all preparatory activities for successful implementation of the Work Tasks described below. The preparatory activities shall include:

(a) Submission of the work schedule and its agreement with the SMS and the Commission;
(b) Submission of documents for arrangement of the Contractor's personnel and transport to access the Stations (please refer to Attachment 2 to the Terms of Reference).

Work Task 2 – Review and finalization of the design documentation by the Contractor

This Work Task includes review of the pre-developed designs for conformity to the requirements of RF laws in the field of fire security and safeguarding systems (please refer to Attachment 1 to the Terms of

Reference). As required, the Contractor shall finalize this documentation in coordination and agreement with the SMS and the Commission. Upon the Commission's acceptance of the design and prior to commencement of dismantling and installation work, the Contractor shall submit one (1) copy of the technical design documentation to the SMS to arrange supervision and acceptance activities of the Work.

Work Task 3 – Supply of equipment, materials and other supplies

The Contractor shall purchase and deliver equipment, materials and supplies required for the Work and specified in the approved design.

Work Task 4 – Dismantle and disposal of the existing fire alarm and safeguarding systems

The Contractor shall perform the following activities:

(a) Dismantle the equipment of the existing fire alarm and safeguarding systems in all three (3) stations;
(b) Handover of the dismantled equipment to the SMS representatives to arrange for its discarding;
(c) After the SMS' approval, arrange a disposal of the discarded equipment.

Work Task 5 – Installation of fire alarm and safeguarding systems and commissioning

The Contractor shall perform the following activities:

(a) Install new fire alarm and safeguarding systems in accordance with the design documentation and relevant requirements;
(b) Commission all systems and perform all required testing of the installed system to check its operation together with the SMS representatives.

Work Task 6 – Development of executive and operational documentation and its submission

The Contractor shall prepare executive and operational documentation in accordance with relevant requirements of the RF laws and submit to the SMS prior to the commencement of acceptance testing. The list of executive documentation is provided in Attachment 1 to the Terms of Reference.

Work Task 7 – Cleaning and removal of debris and materials upon completion of the work

After completion of the installation work, the Contractor shall clean the working area and remove the debris for its further disposal. At the time of work acceptance by the SMS, the territory shall be cleared of debris and construction materials.

3. REQUIREMENTS

3.1 General requirements

The Contractor shall:

(a) Have a license for relevant types of work (if a sub-contracting organization is engaged, it shall have such license available);
(b) Obtain all required permits for access to the Station with the sole purpose of performing the Work (please refer to Attachment 2 to the Terms of Reference).

3.2 Quality and life expectancy

The Contractor shall deliver high-quality materials and workmanship. In selection of materials, the Contractor shall consider the environmental extremes typical to the region where the Station is located.

Life expectancy of elements of the fire alarm and safeguarding systems specified in the design and installed by the Contractor shall be defined as a period of time during which it is expected to meet the requirements before a replacement is needed.

3.3 Time Schedule

The Contractor shall supply, install, commission and test the systems within five (5) months after the approval of the finalized design documentation.

4. INSPECTION

The Commission may send its representative(s) to the Station for inspection during any stage of the Work. The purpose of the inspection will be the inspection of the purchased materials and quality of the Work and their compliance with the local norms and the Terms of Reference. If the inspection reveals that any part of the Work is not in compliance with the Terms of Reference, the Commission shall instruct the Contractor to take the necessary action to remedy the defects. The period to remedy the defects shall be 2 (two) weeks after the written report is provided by the inspection.

5. REPORTING

5.1 Design Documentation and Purchase Report

The Contractor shall prepare and submit the Design Documentation Report and the Equipment Purchase Report to the SMS and the Commission not later than two (2) months after the Contract is signed, providing all recommendations, designs, specifications, drawings and time schedule plan, as described in Work Tasks 1 – 3 of Section 2 of the Terms of Reference.

The finalized design documentation, drawings (if any) and time schedule plan shall be approved by the SMS and the Commission before the commencement of dismantling and installation work at the Stations. The Commission shall review and respond to the Design Documentation Report within 2 weeks after its receipt.

If agreed, the Contractor shall prepare and submit to the Commission the Purchase Report within two (2) weeks after the purchase of all equipment, materials and supplies for the installation work. This part of the Report shall contain the list and description of the purchased equipment, materials and supplies and a proof of the purchase.

If the Commission, after review of the Design Documentation and Purchase Report requires further information and/or remedial action is necessary, the Commission will instruct the Contractor to provide such additional information. The Contractor shall submit such additional information in the form of the Revised Design Report and Purchase Report within 2 (two) weeks of the Commission's instruction.

5.2 Final Report/Revised Final Report

The Contractor shall prepare and submit the Final Report to the Commission and SMS within 5 (five) working days after completion of Work Tasks 4 – 7 referred to in Section 2 of the Terms of Reference. The Report shall include full description of the completed work on site and accompanied by photos for each stage of the work. The Report shall also include documentation described in Work Task 6 of Section 2 above.

If the Commission after review of the Final Report, requests additional information or requests to remedy any part of the Work, the Commission shall instruct the Contractor to provide such information or to take the necessary actions to remedy the defects. The period to remedy the defects shall be two (2) weeks after the Commission's and/or SMS' instructions.

In this case, the Contractor shall re-submit the Report in the form of Revised Final Report to the Commission and SMS within 5 (five) working days after completion of all tasks of the Work. The Report shall include full description of the additional information and/or remedy actions taken. Acceptance of the Final Report/Revised Final Report by the Commission shall be considered the full acceptance of the Work.

6. SUPPLIER'S PERFORMANCE REVIEW

The Contractor's performance under the Contract shall be subject to the Contractor's performance review by the Commission. Generally, this review includes the adherence of the Contractor to the time schedule agreed between both Parties, completeness of the documentation and quality of the Contractor's workmanship and Work. The Commission will review the Contractor's performance after the acceptance of the Final Report/Revised Final Report by the Commission. The Commission may invite the Contractor to discuss the results of such review.

ATTACHMENT 1 TO TERMS OF REFERENCE

"Design Documentation"

dated 08.02.2021

Work on the development of design documentation
fire alarm and security systems

In order to develop design documentation for fire alarm and security systems for PS33 / IS46 and RN59, Zalesovo, Russian Federation, the following works were carried out:

1. Conducting a preliminary design survey of the facility.
2. Determination of the composition of the existing equipment to be decommissioned and dismantled.
3. Development of project documentation.
4. Development of working and estimate documentation

The final product of the execution of works is presented in the form of ready-made design estimates (Annex 2).

Upon completion of the work, an act of acceptance and transfer of the work performed was drawn up, signed by the station operator on April 30, 2021 (Annex 1).

Проектная документация

“Автоматическая установка охранно-пожарной сигнализации. Система оповещения и управления эвакуацией. Автоматическое пожаротушение”

21-34-ОПС.СОУЭ.АПТ

2021

Копировал

А3

1 Общие данные

1.1 Настоящая проектная документация разработана в соответствии с Приложением к заказу на поставку №2021-01031 от 08 февраля 2021г. «Проектные работы по дизайну пожарной сигнализации устройств защиты». Техническим заданием по разработке проектной документации предусмотрено оборудование автоматической охранно-пожарной сигнализацией (далее – ОПС) зданий Пункта сбора и передачи информации (далее – ПСПИ) и помещений радионуклмдной станции (РНС) RN59 по адресу Алтайский край, с. Залесово, войсковая часть 46179-А.

1.2 Объект Заказчика представляет собой одноэтажное здание ПСПИ с цокольным этажом и двумя автомобильными боксами, а также помещение радионуклидной станции RN59 расположенное в соседнем одноэтажном здании относящиеся к Международной системе мониторинга.

1.3 В качестве исходных данных для разработки проекта использованы чертежи заказчика.

1.4 Проект разработан в соответствии с действующими нормативно-техническими документами:

СП 3.13130.2009 Системы противопожарной защиты. Система оповещения и управления эвакуацией людей при пожаре. Требования пожарной безопасности

СП 5.13130.2009 Системы противопожарной защиты. Установки пожарной сигнализации и пожаротушения автоматические. Нормы и правила проектирования (с Изменением N 1)

СП 6.13130.2013 Системы противопожарной защиты. Электрооборудование. Требования пожарной безопасности

ПУЭ, Изд.7 "Правила устройства электроустановок";

ГОСТ Р 21.1101-2013 Система проектной документации для строительства. Основные требования к проектной и рабочей документации

ГОСТ 31565-2012 Кабельные изделия. Требования пожарной безопасности

Федеральный закон от 22 июля 2008 г. № 123-ФЗ Технический регламент о требованиях пожарной безопасности

РД 25. 953-90 Системы автоматические пожаротушения, пожарной, охранной и охранно-пожарной сигнализации. Обозначения условные графические элементов связи

СП 484.1311500.2020 Системы противопожарной защиты. Системы пожарной сигнализации и автоматизация систем противопожарной защиты. Нормы и правила проектирования

Постановление Правительства РФ от 16 февраля 2008 г. N 87 О составе разделов проектной документации и требованиях к их содержанию

СП 76.13330.2016 Электротехнические устройства

ПСО правительства РФ от 25.04.12 №390 Правила противопожарного режима в Российской Федерации"

1.5 На защищаемом объекте в обязательном порядке руководителем организации назначаются:

- лицо, ответственное за эксплуатацию установки;
- дежурный (оперативный) персонал;
- обслуживающий персонал.

Дежурный персонал, осуществляющий круглосуточный контроль за состоянием установки, назначается из дежурного персонала объекта.

Обслуживающий персонал, осуществляющий техническое обслуживание и ремонт установки, назначается из специалистов специализированной организации.

1.6 Автоматическая установка охранно-пожарной сигнализации и установки автоматического пожаротушения выполнены на оборудовании интегрированной системы «Орион» фирмы BOLID (Россия)

1.7 Для сбора, обработки, передачи, отображения и регистрации извещений о пожаре и управления пожарной автоматикой применены:

- пульт контроля и управления охранно-пожарный «С2000-М» - осуществляет функции системного контроллера, опрашивает приборы, подключенные к нему по интерфейсу RS-485;
- блоки индикации с клавиатурой «С2000-БКИ» - выдает сигналы на встроенные световые индикаторы и звуковые сигнализаторы извещений;
- контроллер двухпроводной линии связи «С2000-КДЛ» применен для контроля адресных зон, которые представлены адресными извещателями, адресными расширителями;
- блок контрольно-пусковой «С2000-КПБ» осуществляет контроль линий с включенными в них оповещателями;
- блок сигнально-пусковой «С2000-СП1» - применен для управления инженерным оборудованием;
- блок приемно-контрольный и управления автоматическими средствами пожаротушения С2000-АСПТ - осуществляет контроль зон тушения на предмет возгорания, а также запуском и управлением пожаротушения и оповещения;
- блок контрольно-пусковой «С2000-КПБ» (в системе пожаротушения) осуществляет запуск модулей тушения от команды с С2000-АСПТ;
- блоки индикации системы пожаротушения - выдает сигналы на встроенные световые индикаторы и звуковые сигнализаторы извещений о состоянии систем пожаротушения;
- радиоповторитель интерфейса С2000-РПИ - осуществляет по радиоканалу связь между ПСПИ и радионуклидной стнцией RN59.

1.8 Согласно ПУЭ по степени обеспечения надежности электроснабжения АУПС относится к электроприемникам первой категории согласно ПУЭ.

Питание установки от существующего источника питания ~220 В

1.9 Техническая характеристика электроприемников установки:

- напряжение по рабочему вводу ~ 220 В, 50 Гц.
- резервный ввод предусмотрен от существующего АВР ~ 220 В, 50 Гц.

Встроенные аккумуляторы в РИП, необходимы для бесперебойной работы оборудования на время переключения устройства АВР с основной линии электропитания на резервную (перерыв питания может составлять 0.3 -- 0.8 секунд).

2 Пожарная сигнализация

2.1 Основные проектные решения

2.1.1 Автоматическая установка пожарной сигнализации (ПС) предназначена для обнаружения пожара в защищаемых помещениях и информирования дежурного персонала о месте возгорания и выдачи сигнала на запуск систем оповещения, на управление инженерным оборудованием.

2.1.2. Для автоматического обнаружения пожара в защищаемых помещениях применены:

- извещатель пожарный тепловой адресно-аналоговый С2000-ИП-02-02
- извещатель пожарный дымовой оптико-электронный адресно-аналоговый ДИП-34А-03
- извещатель пожарный ручной адресный ИПР 513-3АМ.

2.2 Общие сведения о принципе работы установки

2.2.1. Установка пожарной сигнализации приводится в автоматический режим работы. Для этого производится подготовка технических средств установки в соответствии с технической документацией на используемые приборы и оборудование, включается электропитание установки.

2.2.2 Каждому адресному ПИ присваивается свой индивидуальный адрес;

2.2.3 Контроллеры «С2000-КДЛ» циклически опрашивают подключенные к ним ПИ и следят за их состоянием и путем полученного ответа передают сообщения о взятии, снятии, нарушении зон по интерфейсу RS485 на пульт «С2000М»;

2.2.4 При возникновении пожара в защищаемых помещениях срабатывают ПИ, установленные в этих помещениях;

2.2.5 Контроллер, к которому подключен сработавший ПИ, фиксирует данный сигнал и передает извещения «Внимание в зоне» и далее «Пожар в зоне» на пульт «С2000М»;

2.2.6 Контроллеры осуществляют так же контроль целостности линий ДПЛС и при повреждении линии передают извещение «Неисправность» на пульт «С2000М»;

2.2.7. При поступлении сигнала «Пожар» пульт «С2000 М» передает сигнально-пусковому блоку «С2000-КПБ» сигналы на запуск системы оповещения, а так же формирует сигнал на реле блока «С2000-СП1», который обеспечивает управление инженерными системами;

2.2.8. Также предусмотрена световая и звуковая сигнализация на блоках индикации состояний «С2000-БКИ» .

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Подп. и дата

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Формат А3

2.3 Размещение электрооборудования и прокладка кабельных сетей

2.3.1 В проекте предусмотрено следующее размещение электрооборудования:

- В здании ПСПИ в помещении электроремонтного участка на щитке пожарной автоматика ЩПА 1 установлены:
- пульт контроля и управления охранно-пожарный С-2000 М;
- блоки индикации и контроля С 2000- БКИ;
-контроллер двухпроводной линии связи С 2000- КДЛ;
контрольно-пусковой блок «С 2000- КПБ»;
-сигнально-пусковой блок С 2000- СП 1 исп.1;
-резервированные источники электропитания с аккумуляторными батареями РИП 24 исп. 56.
- В здании ПСПИ в коридоре на щите управления пожаротушением ЩУПТ установлены:
- блок индикации и контроля С 2000- БКИ
- В здании Радионуклидной станции RN59 в коридоре в Шкафу пожарной сигнализации установлены
- контроллер двухпроводной линии связи «С 2000- КДЛ»;
- контрольно-пусковой блок «С 2000- КПБ»;
- резервированные источники электропитания с аккумуляторными батареями РИП 24 исп. 51.
- В здании Радионуклидной станции RN59 в тамбуре помещения дежурного на щитке пожарной автоматики ЩПА 2 установлены:
- блоки индикации и контроля С 2000- БКИ.

Дымовые и тепловые пожарные извещатели расположены на потолках защищаемых помещений.

Ручные пожарные извещатели расположены у выхода из защищаемого помещения на отм. +1.500 м от уровня пола.

2.3.2 Кабельные линии ПС, интерфейс (RS-485) интегрированной системы безопасности выполнены кабелями с медными жилами, обеспечивающими работоспособность при воздействии открытого пламени в течение 180 минут, с обязательным соблюдением огнестойкости прокладки кабельных линий

Марки кабелей и проводов, применяемых в проекте, указаны в спецификации оборудования и кабельном журнале.

3 Система оповещения людей о пожаре

3.1 Основные проектные решения

3.1.1 Система оповещения обеспечивает оповещение о пожаре людей, находящихся на момент пожара в помещениях, защищаемых установками пожарной сигнализацией.

3.1.2 Проектной документацией, в соответствии с СП 3.13130.2009, предусмотрена система оповещения 2-го типа, имеющая в своем составе:

- звуковое оповещение;
- эвакуационные световые оповещатели, указывающие направление движения.

3.2 Общие сведения о принципе работы

3.2.1 Система оповещения приводится в дежурный режим работы, для этого производится подготовка технических средств, в соответствии с технической документацией на приборы и оборудование, затем включается электропитание установки

3.2.2 Управление системой - автоматическое

При срабатывании ПИ в защищаемых помещениях, сигнал о возникновении пожара поступает от прибора «С2000-КДЛ» на пульт «С2000-М».

Пульт «С2000-М» выдает сигнал на включение соответствующих выходов контрольно-пусковых блоков типа «С2000-КПБ» которые включают световые оповещатели и запускают звуковое оповещение.

3.2.3 Световые указатели направления движения в помещениях всегда находятся во включенном состоянии. Указатели подключены к блоку «С 2000- КПБ» системы «Орион» фирмы BOLID.

В дежурном режиме (до пожара) блок «С 2000- КПБ» осуществляют непрерывный контроль цепей оповещателей. В случае обрыва или короткого замыкания этих цепей выдается сигнал о неисправности по интерфейсу RS-485 на пульт «С 2000- М», на блок индикации «С 2000- БКИ».

3.3 Размещение электрооборудования, прокладка электропроводок

3.3.1 Блоки контрольно-пусковые «С 2000- КПБ» установлены на щитках пожарной автоматики ЩПА 1 и ЩПА 2 (см. п.п.2.3.1).

3.3.2 Звуковые оповещатели установлены на высоте не менее +2.300 от уровня пола и не менее 150 мм от потолка;

3.3.3 Световые оповещатели «ВЫХОД» устанавливаются непосредственно над эвакуационными выходами из защищаемых помещений

3.3.4 Кабельные линии СОУЭ выполнены огнестойкими кабелями с медными жилами, обеспечивающими работоспособность при воздействии открытого пламени в течение 180 минут, с обязательным соблюдением огнестойкости прокладки кабельных линий

Марки кабелей и проводов, применяемых в проекте, указаны в спецификации оборудования и кабельном журнале.

4 Охранна сигнализация

4.1 Основные проектные решения

4.1.1 Автоматическая установка охранной сигнализации (ОС) предназначена для обнаружения проникновения в защищаемые помещениях и информирования дежурного персонала о месте проникновения и выдачи сигнала Тревога. Система охранной сигнализации построена в два рубежа. В первый рубеж входят датчики блокировки окон и дверей имеющих недостаточную техническую укрепленность. Таким образом, при их повреждении формируется сигнал тревоги еще на том этапе, когда нарушитель не проник внутрь объекта.

Второй рубеж это внутренний объем помещений. Для его блокировки используются извещатели объемного обнаружения. Они формируют сигнал тревоги, когда злоумышленник уже проник внутрь охраняемого объекта.

4.1.2. Для автоматического обнаружения проникновения в защищаемые помещения применены:

- извещатель охранный магнитоконтактный адресный С2000-СМК
- извещатель охранный объемный оптико-электронный адресный С2000-ИК исп.02
- извещатель охранный поверхностный звуковой адресный С2000-СТ исп.02.

4.2 Общие сведения о принципе работы установки

4.2.1. Установка охранной сигнализации приводится в автоматический режим работы. Для этого производится подготовка технических средств установки в соответствии с технической документацией на используемые приборы и оборудование, включается электропитание установки.

4.2.2 Каждому адресному извещателю присваивается свой индивидуальный адрес;

4.2.3 Контроллеры «С2000-КДЛ» циклически опрашивают подключенные к ним охранные извещатели и следят за их состоянием и путем полученного ответа передают сообщения о взятии, снятии, нарушении зон по интерфейсу RS485 на пульт «С2000М»;

4.2.4 При угрозе проникновения в защищаемых помещениях срабатывают охранные извещатели, установленные в этих помещениях;

4.2.5 Контроллер, к которому подключен сработавший извещатель, фиксирует данный сигнал и передает извещения «Тревога» на пульт «С2000М»;

4.2.6 Контроллеры осуществляют так же контроль целостности линий ДПЛС и при повреждении линии передают извещение «Неисправность» на пульт «С2000М»;

4.2.7. При поступлении сигнала «Тревога» пульт «С2000 М» передает сигнал на блок индикации «С2000-БКИ» для отображения информации о проникновении.

4.3 Размещение электрооборудования и прокладка кабельных сетей

4.3.1 Контроллеры двухпроводных линий связи С2000-КДЛ установлены на щитках пожарной автоматики ЩПА1 и ЩПА2 (см. п.п.2.3.1).

4.3.2 Кабельные линии ОС выполнены кабелями с медными жилами. Марки кабелей и проводов, применяемых в проекте, указаны в спецификации оборудования и кабельном журнале.

Взам. инв. №

Подп. и дата

Инв.№ подл.

Изм.	Кол.у	Лист	N док	Подпись	Дата

21-34-ОПС.СОУЭ.АПТ

Лист 1.3

Формат А3

5 Автоматическое пожаротушение

5.1 Основные проектные решения

5.1.1 Автоматическая установка пожаротушения (АПТ) предназначена для обнаружения пожара в защищаемых помещениях, информирования дежурного персонала о месте возгорания, выдачи сигнала на запуск систем оповещения, а также запуска модулей пожаротушения.

5.1.2. Для автоматического обнаружения пожара в защищаемых помещениях применены:

- извещатель пожарный тепловой ИП 102-5/1-А3
- извещатель пожарный дымовой ИП-212-189
- устройство дистанционного пуска УДП 513-3М
- извещатель охранный точечный магнитоконтактный ИО 102-20/Б2П.

5.1.3. В качестве модулей автоматического пожаротушения в защищаемых помещениях применены:

- Модули порошкового пожаротушения МПП (Н)-6-И-ГЭ-У2 (" Тунгус ").

5.2 Общие сведения о принципе работы установки

5.2.1. Установка АПТ приводится в автоматический режим работы. Для этого производится подготовка технических средств установки в соответствии с технической документацией на используемые приборы и оборудование, включается электропитание установки.

5.2.2 Блок приемно-контрольный и управления автоматическими средствами пожаротушения С2000-АСПТ контролирует состояние подключенных к нему пожарных извещателей, оповещателей, модулей пожаротушения путем постоянного контроля линий малым током обратной полярности;

5.2.3 При возникновении пожара в защищаемых помещениях срабатывают ПИ, установленные в этих помещениях;

5.2.4 С2000-АСПТ, к которому подключен сработавший ПИ, фиксирует данный сигнал и передает извещения «Внимание» на пульт «С2000М», при срабатывании второго извещателя этого же С2000-АСПТ на пульт С2000М передается сигнал «Пожар» и происходит передача сигнала на контрольно-пусковой блок С2000-КПБ, подключенный к С2000-АСПТ по линии RS 485(2), на запуск модулей пожаротушения, при этом в помещении где сработали извещатели загорается табло «Порошок уходи», звучит звуковой сигнал сирены, происходит отсчет времени задержки пуска, необходимый для эвакуации персонала, по истечении времени задержки происходит веерный запуск модулей автоматического пожаротушения.

5.3 Размещение электрооборудования и прокладка кабельных сетей

5.3.1 В проекте предусмотрено следующее размещение электрооборудования:

- В здании ПСПИ в помещении электроремонтного участка на щитке пожарной автоматика ЩПА 1 установлены:
- блоки приемно-контрольные и управления автоматическими средствами пожаротушения С2000-АСПТ;
- блок индикации системы пожаротушения С2000-ПТ;
- контрольно-пусковые блок «С2000-КПБ» (подключенные по линии RS 485(2) к С2000-АСПТ.
- В здании ПСПИ в коридоре на щите управления пожаротушением ЩУПТ установлены:
- блок индикации системы пожаротушения С2000-ПТ;
- устройства дистанционного пуска УДП 513-3М

Дымовые и тепловые пожарные извещатели расположены на потолках защищаемых помещений.

Устройства дистанционного пуска расположены на отм. +1.500 м от уровня пола.

5.3.2 Кабельные линии АПТ, интерфейсы RS-485 (2), пусковые цепи модулей пожаротушения выполнены кабелями с медными жилами, обеспечивающими работоспособность при воздействии открытого пламени в течение 180 минут, с обязательным соблюдением огнестойкости прокладки кабельных линий

Марки кабелей и проводов, применяемых в проекте, указаны в спецификации оборудования и кабельном журнале.

6 Электропитание и заземление оборудования

6.1 Электропитание охранно-пожарных блоков выполнить от резервированных источников электропитания РИП на 24В. Электропитание С2000-АСПТ выполнить по первой категории электроснабжения согласно ПУЭ изд.6, 7 от электрической сети напряжением 220В промышленной частоты 50 Гц или от источников бесперебойного питания, обеспечивающих работоспособность, при отключении внешних источников электропитания, не менее, чем на 24 часа в дежурном режиме и не менее 1 часа в режиме «Пожар».

Электропитание должно осуществляться от вводной панели вводно-распределительного щита (ГРЩ) с устройством АВР.

Встроенные аккумуляторы в РИП, С2000-АСПТ необходимы для бесперебойной работы оборудования на время переключения устройства АВР с основной линии электропитания на резервную (перерыв питания может составлять 0.3 -- 0.8 секунд).

Защитное заземление (зануление) электроснабжения должно быть выполнено в соответствии с требованиями ПУЭ изд.6, 7, СНиП 3.05.06, ГОСТ 12.1.030 и технической документацией завода-изготовителя. Сопротивление заземляющего устройства, используемого для заземления электрооборудования, должно быть не более 4,0 Ом. Для заземления корпусов приборов, устройств и модулей задействована 3-я жила линии питания приборов от питающих электрощитов.

В соответствии с требованиями Федерального закона от 22 июля 2008 г. № 123-ФЗ «Технический регламент о требованиях пожарной безопасности» ст. 84 п. 11 системы оповещения людей о пожаре и управления эвакуацией людей должны быть оборудованы источниками бесперебойного электропитания.

Выбор резервируемого источника питания

При выборе источника питания можно воспользоваться нижеприведенной формулой :

$Y = (\Sigma I деж \times Tдеж + \Sigma I трев \times Tтрев) \times Кзап \times Ктемп,$

Где:

$\Sigma I деж, \Sigma I трев$ - суммарный ток нагрузок, питаемых от источника питания в дежурном режиме и в режиме тревоги соответственно.

Тдеж, Ттрев - время работы системы в дежурном режиме и в режиме тревоги (1 ч. и 1 ч.) соответственно, ввиду подключения.

Кзап = 1.25 (т.е. 25% сверх минимальной расчетной емкости).

Коэффициент 1,25 обобщенный, для более точного определения этого коэффициента нужно использовать график зависимости емкости аккумуляторной батареи от срока службы, приведенный в инструкции по эксплуатации на выбранную АКБ.

Ктемп - зависимость емкости от температуры окружающей среды при различных токах разряда приведенный в инструкции по эксплуатации на выбранную АКБ..

Ток, выдаваемый РИП должен быть не менее, максимального значения тока потребляемого системой в дежурном или тревожном режиме.

Т.к. РИП применяется в системе, обеспечивающей пожарную защиту объекта, то он должен иметь сертификат соответствия «Техническому регламенту о требованиях пожарной безопасности».

Для упрощения расчетов воспользуемся программой «Ваттметр» (ее можно получить на сайте ЗАО НВП «Болид»), отчёты представлены в табл. 1. и в табл.2

Все расчеты, выполненные в программе «Ваттметр», верны для АКБ производства Delta DTM с проектным сроком службы 5 лет. В случае замены АКБ на марку другой серии либо другого производителя необходимо выполнить новый расчет!

Примечание: * - Табло «Выход» включено в дежурном режиме, в режиме тревоги оно работает в режиме «мигает из состояния включено». В связи с этим принимаем «наихудший вариант», что табло будет включено в дежурном режиме.

Таблица 1

UG1, UG2			
Напряжение питания = 24 В			
Время резервирования = 1 час в дежурном режиме + 1 час в режиме тревоги			
Доп. нагрузка в дежурном режиме = 200 мА			
Доп. нагрузка в режиме тревоги = 560 мА			
Средняя температура эксплуатации: t = +25°С			
Установленные приборы	Кол	I деж	I трев.
Пульт контроля и управления охранно-пожарный «С 2000М»	1	0,035 А	0,065 А
Радиоповторитель интерфейсов «С2000-РПИ», «С 2000-РПИ» исп. 01	1	0,040 А	0,040 А
Блок индикации с клавиатурой «С 2000-БКИ»	4	0,050 А	0,100 А
Клавиатура «С 2000-К»	1	0,025 А	0,025 А
Контроллер двухпроводной линии связи «С 2000-КДЛ»	1	0,053 А	0,053 А
Контроллер двухпроводной линии связи «С 2000-КДЛ»	1	0,080 А	0,080 А
Блок сигнально-пусковой «С 2000-СП1»	1	0,015 А	0,070 А
Блок индикации системы пожаротушения «С 2000-ПТ»	2	0,050 А	0,100 А
Контрольно-пусковой блок «С 2000-КПБ»	5	0,040 А	0,075 А
РАССЧИТАННЫЕ ДАННЫЕ			
Резервированный источник питания: РИП-24 исп.56 (РИП-24-4/40М3-Р-RS) 2х40			
Суммарный ток всех приборов		0,948 А	1.868 А
Минимальная емкость АКБ		2.947 А*ч	
Мощность тепловыделения оборудования		22.75 Вт	44.83 Вт
Мощность тепловыделения РИП		17.07 Вт	29.60 Вт
Общая мощность тепловыделения		39.83 Вт	74,43 Вт
Мощность РИП потребляемая отсети		70.69 ВА	124,7 ВА

Таблиц 2

UG3, UG4			
Напряжение питания = 24 В			
Время резервирования = 1 час в дежурном режиме + 1 час в режиме тревоги			
Доп. нагрузка в дежурном режиме = 80 мА			
Доп. нагрузка в режиме тревоги = 160 мА			
Средняя температура эксплуатации: t = +25°С			
Установленные приборы	Кол	I деж	I трев.
Радиоповторитель интерфейсов «С2000-РПИ», «С 2000-РПИ» исп. 01	1	0,040 А	0,040 А
Блок индикации с клавиатурой «С 2000-БКИ»	2	0,050 А	0,100 А
Контроллер двухпроводной линии связи «С 2000-КДЛ»	2	0,044 А	0,044 А
Контроллер двухпроводной линии связи «С 2000-КДЛ»	5	0,044 А	0,044 А
Контрольно-пусковой блок «С 2000-КПБ»	1	0,040 А	0,075 А
Устройство коммутационное УК-ВК исп.14	1	0,038 А	0,038 А
РАССЧИТАННЫЕ ДАННЫЕ			
Резервированный источник питания: РИП-24 исп.51 (РИП-24-2/7П1-Р-RS)			
Суммарный ток всех приборов		0,386 А	0,601 А
Минимальная емкость АКБ		1,097 А*ч	
Мощность тепловыделения оборудования		9,264 Вт	14,42 Вт
Мощность тепловыделения РИП		7,208 Вт	9,852 Вт
Общая мощность тепловыделения		16,47 Вт	24,28 Вт
Мощность РИП потребляемая отсети		29,3 ВА	40,05 ВА

7. Требования к безопасности труда

Монтажные работы должны выполняться специализированной организацией при строительной готовности, в строгом соответствии с действующими нормами и правилами на монтаж, испытания и сдачу в эксплуатацию установок пожарной сигнализации РД 78.145-93.

Монтажно наладочные работы начинать после выполнения мероприятий по технике безопасности согласно СНиП 12-03-99 и акта входного контроля.

При работе с электроинструментом необходимо обеспечить выполнение требования ГОСТ 12.2.013.0-91.

8. Монтаж оборудования и электропроводов

Монтажная организация должна перед работами ознакомиться с проектом и изучить применяемое оборудование. Организациям, которые ранее применяли это оборудование, достаточно изучить только проект.

Оборудование допускается к установке после проведения входного контроля с составлением акта по установленной форме.

Монтаж необходимо осуществлять в определённой последовательности:

1. проверка закладных труб на сквозной проход проводов;
2. осуществить крепление коробов и труб ПХВ в указанных местах;
3. произвести монтаж проводов;
4. произвести установку извещателей (дымовые закрыть крышками от запылённости на время монтажных работ);
5. произвести установку всех адресных устройств и их подключение (записать их номера и адреса, а также их принадлежность к ШС). См. руководство по программированию;
6. произвести установку остального оборудования и источников питания;
7. поочерёдно подключить информационные линии и программировать АУ находящиеся на этой линии;
8. проверить правильность создания логики управления, включив по очереди все извещатели секции.

К монтажу и обслуживанию системы допускаются лица прошедшие инструктаж по технике безопасности. Прохождение инструктажа отмечается в журнале.

При производстве монтажных работ соблюдать требования СНиП 111-4-80 "Техника безопасности в строительстве", "Правила эксплуатации установок потребителей", "Правила техники безопасности при эксплуатации электроустановок потребителей Госэнергонадзора".

При производстве строительно-монтажных работ рабочие места монтажников должны быть оборудованы приспособлениями, обеспечивающие безопасность производства работ.

При работе с электроустановками вывешивать предупредительные плакаты. Электромонтажные работы в действующих установках производить только после снятия напряжения.Пусконаладочные работы следует проводить в соответствии с требованиями СНиП 3.05.06.

9. Регламентные работы.

Регламентные работы по техническому обслуживанию и планово-предупредительному ремонту (ТО и ППР) всех систем, должны осуществляться в соответствии с годовым планом-грфиком, составленным с учётом документации заводов изготовителей и сроками проведения ремонтных работ, специализированной организацией, имеющей лицензию, по договору.

Нормативы численности персонала учитывают выполнение работ по техническому обслуживанию и плановому техническому ремонту системы. Проведение указанных выше работ осуществляют: слесарь-электрик 4-го разряда - 1 чел. и электромонтер 5-го разряда - 1 чел.

Техническое обслуживание системы "Орион" осуществляется в объёме определённом технической документацией, т.е. по показаниям С2000М.

Проверку работоспособности системы производят в соответствии с действующими нормативными документами и подтверждается актами.

Основным назначением ТО является выполнение мероприятий, направленных на поддержание АСПС в состоянии готовности к применению, предупреждению неисправностей и преждевременного выхода из строя составляющих приборов и элементов.

Взам. инв. №

Подп. и дата

Инв.№ подл.

Изм.	Кол.у	Лист	N док	Подпись	Дата

21-34-ОПС.СОУЭ.АПТ

Лист 1.5

Формат А3

Структура ТО и ремонта включает в себя следующие виды работ:
- техническое обслуживание;
- плановый текущий ремонт;
- плановый капитальный ремонт;
- неплановый ремонт.

К ТО относится наблюдение за плановой работой АСПС, устранение обнаруженных дефектов, регулировка, настройка, опробование и проверка.

В объеме текущего ремонта входит частичная разборка, замена или ремонт проводов и кабельных сооружений. Производятся замеры и испытания оборудования и устранение обнаруженных дефектов.

В объеме капитального ремонта, кроме работ, предусмотренных текущим ремонтом, входит замена изношенных элементов АСПС и улучшение эксплуатационных возможностей оборудования.

Неплановый ремонт выполняется в объеме текущего или капитального ремонта и производится после пожара, аварии, вызванной неудовлетворительной эксплуатацией оборудования или для предотвращения ее.

При проведении работ по ТО следует руководствоваться требованиями инструкций по эксплуатации завадов-изготовителей, РД 009-01-96 "Установки пожарной автоматики. Правила технического содержания".

Типовой регламент ТО ОПС

Перечень работ	Переодичность
1. Внешний осмотр составных частей установки: приемо-контрольного прибора управления, оповещателей, извещателей, шлейфов сигнализации на отсутствие механических повреждений, коррозии, грязи; прочности крепления и т.д.	Ежемесячно
2. Контроль рабочего положения выключателей и переключателей, исправность световой индикации, наличие пломб и гарантийных маркировочных этикеток на ППКПУ	Ежемесячно
3. Контроль основного и резервного источников питания и проверка автоматического переключения питания с основного ввода на резервный	Ежемесячно
4. Прверка работоспособности составных частей установки (ППКПУ, оповещателей, извещателей, измерение параметров шлейфов сигнализации и пр.)	Ежемесячно
5. Профилактические работы, включающие визуальную проверку состояния пожарных извещателей, удаление пыли, грязи и пр.	Ежемесячно
6. Проверка работоспособности установки в целом (комплексная проверка)	Ежеквартально
7. Метрологическая проверка КИП	Ежегодно
8. Измерение сопротивления защитного и рабочего заземления	Ежегодно
9. Измерение сопротивления электрических цепей	1 раз в 3 года
10. Замена аккумуляторных батарей в блоках бесперебойного питания	1 раз в 5 лет

Типовой регламент ТО АПТ

Перечень работ	Переодичность
1. Внешний осмотр составных частей ситстемы (технологической части трубопроводов, распылителей, модулей порошком, баллонов со сжатым газом, манометров и т.п.; электротехнической части шкафов электроавтоматики и т.д.; сигнализационной части приемно-контрольных приборов, извещателей и т.д.) на отсутствие механических повреждений, грязи, прочности крепления и т.д.	Ежемесячно
2. Контроль давления в модулях и пусковых баллонах	Ежемесячно
3. Контроль основного и резервного источников питания и проверка автоматического переключения питания с основного ввода на резервный	Ежемесячно
4. Прверка работоспособности составных частей установки (ППКПУ, оповещателей, извещателей, измерение параметров шлейфов сигнализации и пр.)	Ежемесячно
5. Профилактические работы, включающие визуальную проверку состояния пожарных извещателей, удаление пыли, грязи и пр.	Ежемесячно
6. Проверка работоспособности установки в целом (комплексная проверка)	1 раз в полгода
7. Метрологическая проверка КИП	Ежегодно
8. Измерение сопротивления защитного и рабочего заземления	Ежегодно
9. Измерение сопротивления электрических цепей	1 раз в 3 года
10. Замена аккумуляторных батарей в блоках бесперебойного питания	1 раз в 5 лет

Взам. инв. №

Подп. и дата

Инв.№ подл.

Изм.	Кол.у	Лист	N док	Подпись	Дата

21-34-ОПС.СОУЭ.АПТ

Лист 1.6

Формат А3

Ведомость чертежей основного комплекта ПЗУ

Лист	Наименование	Примечание
1	Общие данные	6 листов
2	Структурная схема	
3	Условные обозначения	
4	Схемы установки технических средств	
5	Схемы подключения извещателей к Блоку приемно контрольному и управления автоматическими средствами пожаротушения С 2000- АСПТ	
6	Схемы подключения оборудования	
7	Размещение оборудования в шкафах, на щитах ОПС	
8	Схема электропитания установк ОПС, СОУЭ, АПТ в ПСПИ	
9	Схема электропитания установк ОПС, СОУЭ, АПТ в РНС	
10	Схемы подключения оборудования автоматического пожаротушения в Боксе №1	
11	Схемы подключения оборудования автоматического пожаротушения в Боксе №2	
12	Схемы подключения оборудования автоматического пожаротушения в Котельной	
13	План прокладки кабельных трасс и расстановки оборудования ПС в ПСПИ 1 этаж	
14	План прокладки кабельных трасс и расстановки оборудования ПС в ПСПИ цокольный этаж	
15	План прокладки кабельных трасс и расстановки оборудования ПС и СОУЭ в РНС RN59	
16	План прокладки кабельных трасс и расстановки оборудования ОС в ПСПИ 1 этаж	
17	План прокладки кабельных трасс и расстановки оборудования ОС в ПСПИ цокольный этаж	
18	План прокладки кабельных трасс и расстановки оборудования ОС в РНС RN59	
19	План прокладки кабельных трасс и расстановки оборудования АПТ ПСПИ. Модули пожаротушения	
20	План прокладки кабельных трасс и расстановки оборудования АПТ ПСПИ. Пожарные извещатели	
21	План прокладки кабельных трасс и расстановки оборудования АПТ ПСПИ. Оповещение	
22	План прокладки кабельных трасс и расстановки оборудования СОУЭ ПСПИ	
23	План прокладки кабельных трасс и расстановки оборудования СКУД ПСПИ.	
24	План прокладки кабельных трасс электропитания и интерфейсной линии	
25	План прокладки кабельных трасс и расстановки оборудования аварийного освещения	
26	Кабельный журнал	

Ведомость ссылочных и прилагаемых документов

Обозначение	Наименование	Примечание
	Ссылочные	
	Прилагаемые	
21-34-ОПС.СОУЭ.АПТ.С	Спецификация оборудования	

Проектная документация разработана в соответствии с Техническим заданием на проектирование, требованиями Технического регламента, национальных стандартов и сводов правил

Инженер _____ Мамеев А.Е.

Взам. инв. №

Подп. и дата

Инв.№ подл.

Изм.	Кол.у	Лист	N док	Подпись	Дата
Инженер		Мамеев			

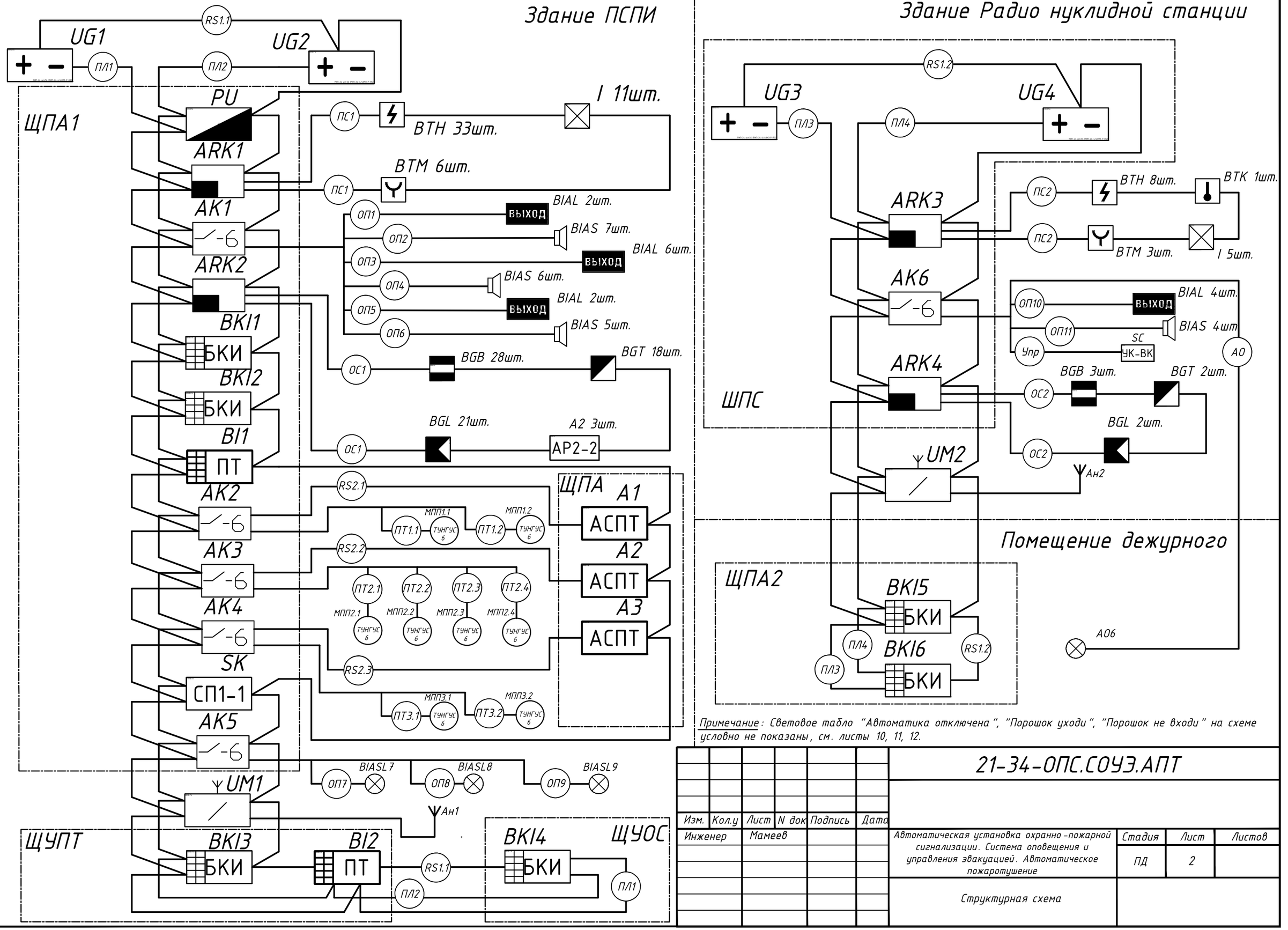
21-34-ОПС.СОУЭ.АПТ

Автоматическая установка охранно-пожарной сигнализации. Система оповещения и управления эвакуацией. Автоматическое пожаротушение

Стадия	Лист	Листов
ПД	1	26

Общие данные

Формат А3



Примечание: Световое табло "Автоматика отключена", "Порошок уходи", "Порошок не входи" на схеме условно не показаны, см. листы 10, 11, 12.

						21-34-ОПС.СОУЭ.АПТ	
Изм.	Кол.у	Лист	N док	Подпись	Дата		
Инженер		Мамеев				Автоматическая установка охранно-пожарной сигнализации. Система оповещения и управления эвакуацией. Автоматическое пожаротушение	Стадия: ПД; Лист: 2; Листов:
						Структурная схема	

Взам. инв. № | Подп. и дата | Инв.№ подл.

Формат А3

Наименование	Обозначение
Пульт контроля и управления охранно-пожарный С 2000 М	PU
Контроллер двухпроводной линии связи С 2000-КДЛ	ARK
Контрольно-пусковой блок С 2000-КПБ	AK
Блок индикации с клавиатурой С 2000-БКИ	BKI
Блок индикации системы пожаротушения С 2000-ПТ	BI
Блок сигнально-пусковой С 2000-СП1, исп.1	SK
Радиоповторитель интерфейсов С 2000-РПИ	UM
Резервированный источник питания РИП-24	UG
Блок приемно-контрольный и управления автоматическими средствами пожаротушения С 2000-АСПТ	A
Устройство коммутационное УК-ВК	SC
Клавиатура С 2000-К	KU
Считыватель брелоков	CR
Извещатель пожарный дымовой оптико-электронный адресно-аналоговый ДИП-34 А	BTH
Извещатель пожарный дымовой оптико-электронный адресно-аналоговый ДИП-34 А за подвесным потолком	BTH
Извещатель пожарный ручной адресный ИПР 513-3 АМ	BTM
Извещатель пожарный тепловой максимально-дифференциальный адресно-аналоговый С 2000-ИП-03	BTK
Блок развветвительно-изолирующий БРИЗ	I
Устройство контроля шлейфов сигнализации Маяк-ШС исп. 1	IL
Коробка монтажная огнестойкая КМ-О (4 к)	
Коробка ответвительная 100 х 100 х 50	
Извещатель охранный магнитоконтактный адресный "С 2000-СМК"	BGB
Извещатель охранный объемный оптико-электронный адресный С 2000-ИК исп.02	BGL

Наименование	Обозначение
Извещатель охранный поверхностный звуковой адресный С 2000-СТ исп.02	BGT
Адресный расширитель С 2000-АР2	A2
Устройство дистанционного пуска УДП 513-3М	UDP
Модуль порошкового пожаротушения МПП (Н)-6-И-ГЭ-У2 ("Тунгус")	МПП
Оповещатель охранно-пожарный световой (табло) Молния-24 "Порошок уходи"	BIAL
Оповещатель охранно-пожарный световой (табло) Молния-24 "Порошок не входи"	BIAL
Оповещатель охранно-пожарный световой (табло) Молния-24 "Автоматика отключена"	BIAL
Оповещатель охранно-пожарный световой (табло) Молния-24 "Выход"	BIAL
Оповещатель охранно-пожарный комбинированный свето-звуковой Маяк-24-К	BIASL
Светильник аварийного освещения SKAT LT-2330 LED	A0
Оповещатель охранно-пожарный световой (табло) Молния-24	A06
Оповещатель охранно-пожарный звуковой Маяк-24-ЗМ	BIAS
Прокладка кабеля в гофро трубе ПВХ	
Прокладка кабеля в кабель канале	
Проводка приходит снизу	
Проводка уходит вниз	
Проводка уходит вверх	
Извещатель охранный точечный магнитоконтактный ИО 102-20/Б2П	BGB
Извещатель пожарный дымовой ИП 212-189	BTH
Извещатель пожарный тепловой максимальный ИП 103-5/1-А3	BTK

Взам. инв. N

Дата и подпись

Инв. N подл.

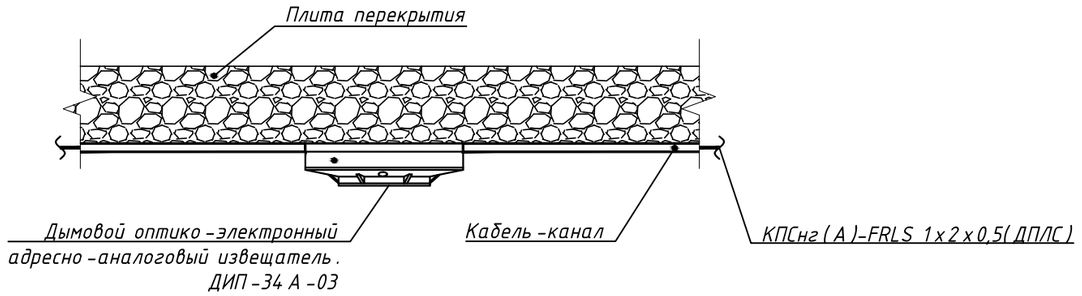
Изм.	Кол.у	Лист	N док	Подпись	Дата
Инженер		Мамеев			

21-34-ОПС.СОУЭ.АПТ

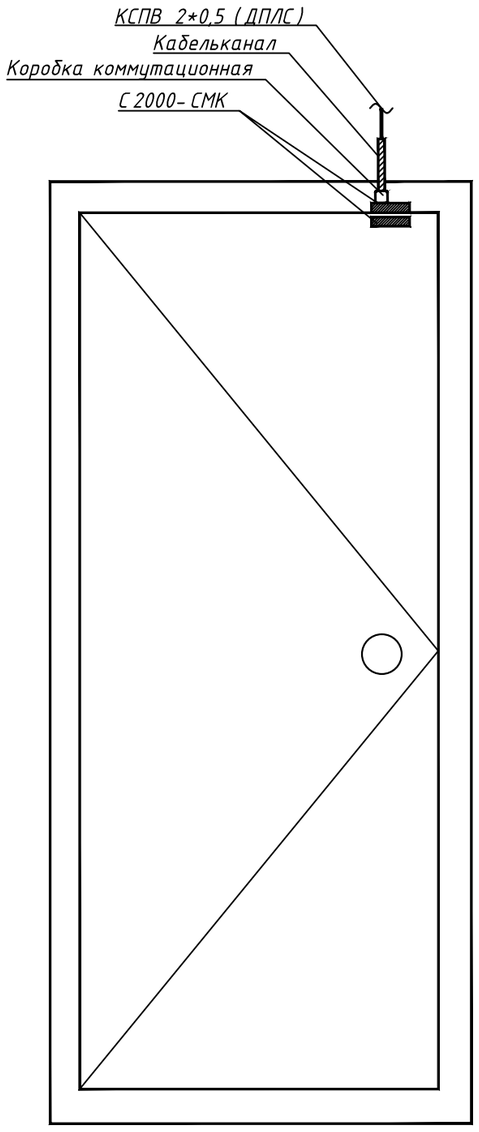
Автоматическая установка охранно-пожарной сигнализации. Система оповещения и управления эвакуацией. Автоматическое пожаротушение	Стадия	Лист	Листов
	ПД	3	
Условные обозначения			

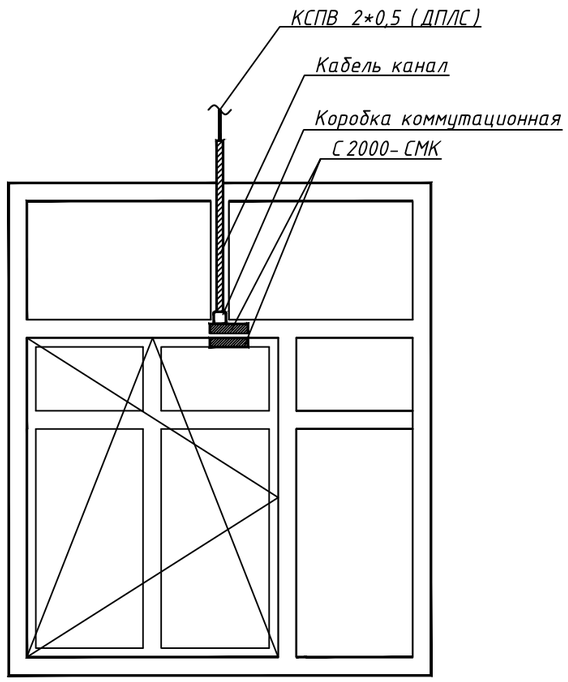
Формат А3

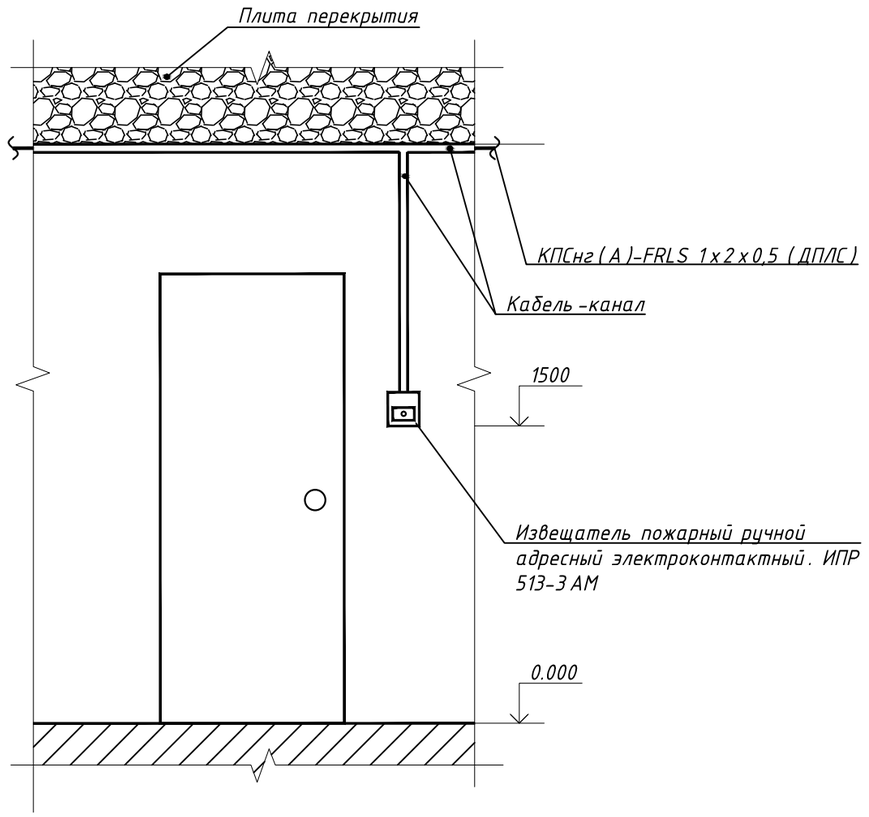
Схемы установки пожарных извещателей.



Схемы блокировки отдельных конструкций с помощью СМК.







Взам. инв. №	
Подп. и дата	
Инв.№ подл.	

Изм.	Кол.у	Лист	N док	Подпись	Дата	21-34-ОПС.СОУЭ.АПТ			
Инженер		Мамеев				Автоматическая установка охранно-пожарной сигнализации. Система оповещения и управления эвакуацией. Автоматическое пожаротушение	Стадия	Лист	Листов
							ПД	4	
						Схемы установки технических средств			

Формат А3

Схема подключения дымовых пожарных извещателей ИП 212-189 (тип ШС 1)

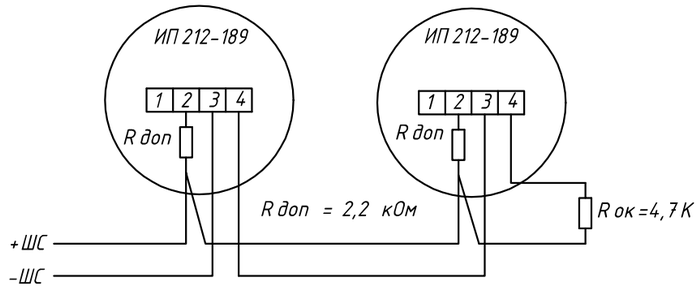


Схема подключения устройства дистанционного пуска УДП 513-3М

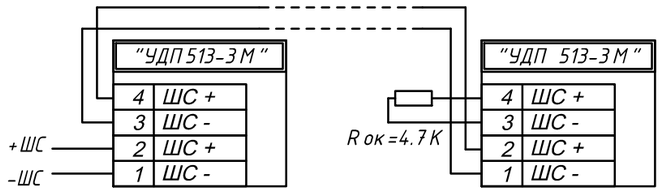
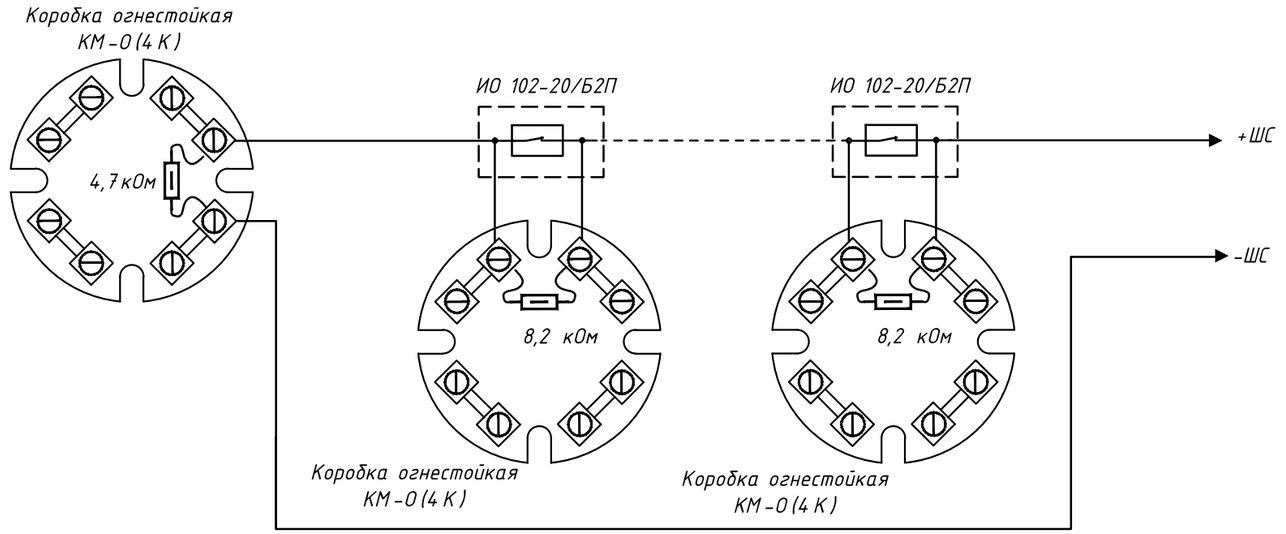


Схема подключения извещателей блокировки входных дверей



Типовая схема подключения модулей пожаротушения к Контрольно-пусковому блоку С2000-КПБ (количество подключаемых модулей указано по наибольшому в зоне тушения):

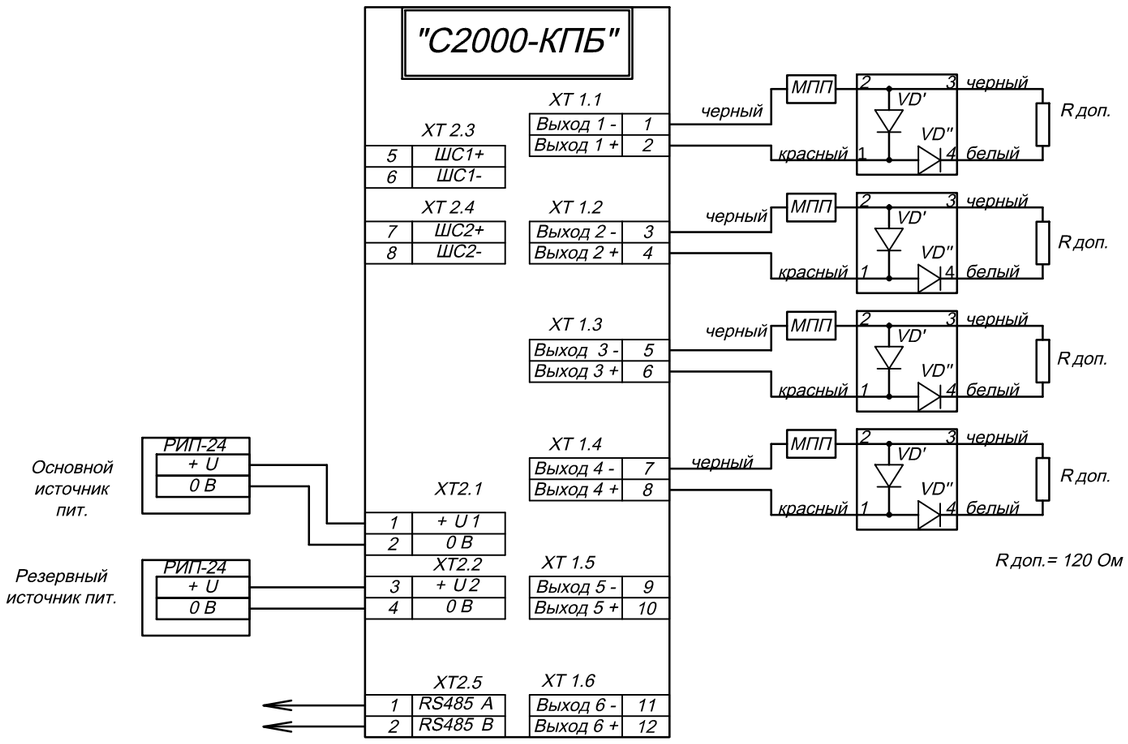
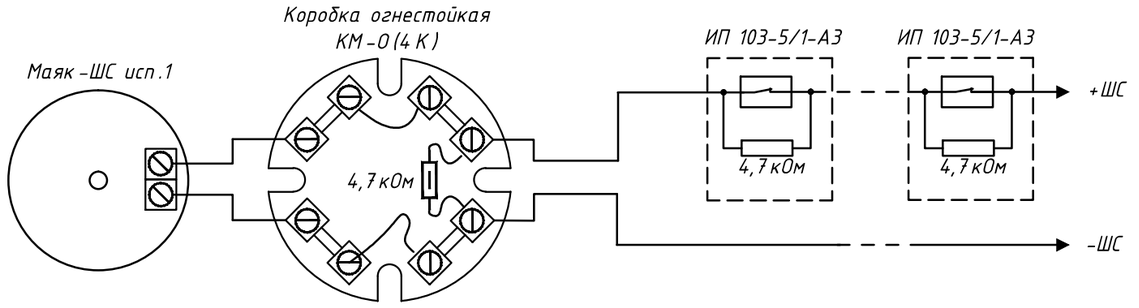


Схема подключения тепловых пожарных извещателей ИП 103-5/1-А3 (тип ШС 3)



Изм.	Кол.у	Лист	N док	Подпись	Дата	21-34-ОПС.СОУЭ.АПТ			
						Войсковая часть 46179-А			
Инженер		Мамеев				Автоматическая установка охранно-пожарной сигнализации. Система оповещения и управления эвакуацией. Автоматическое пожаротушение	Стадия	Лист	Листов
							ПД	5	
						Схемы подключения извещателей к Блоку приемно контрольному и управления автоматическими средствами пожаротушения С2000-АСПТ			

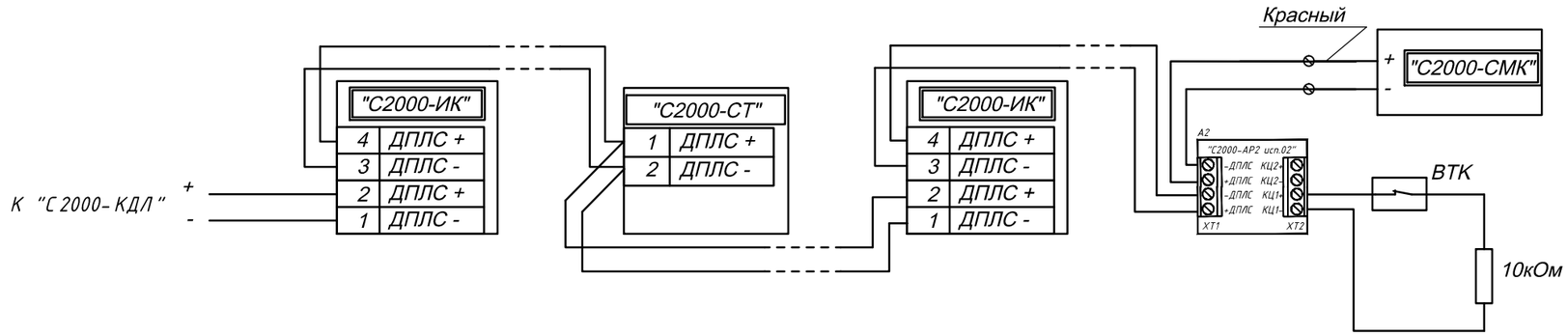
Взам. инв. №

Подп. и дата

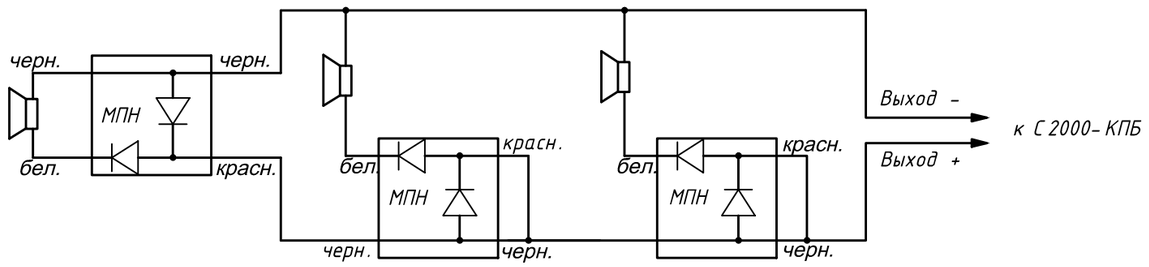
Инв.№ подл.

Формат А3

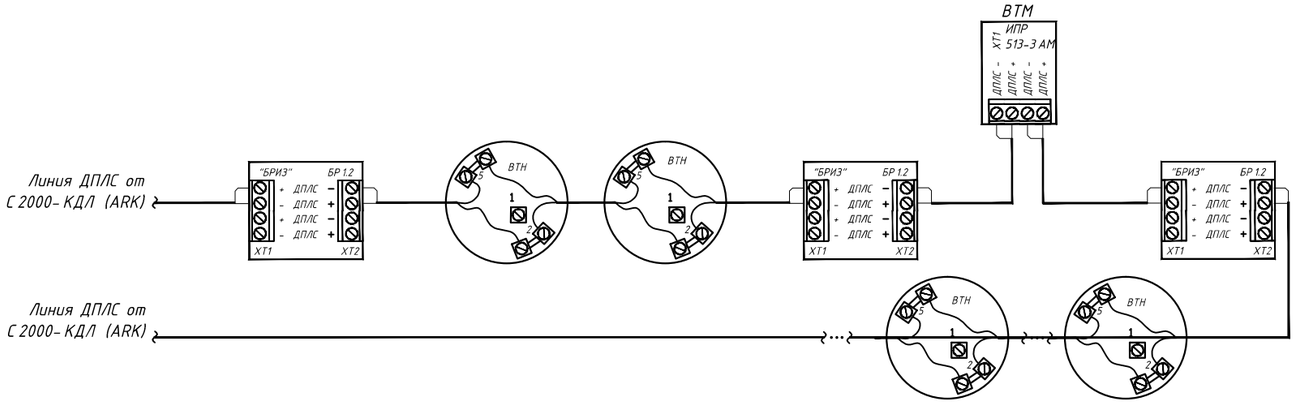
Типовая схема подключения адресных охранных извещателей:



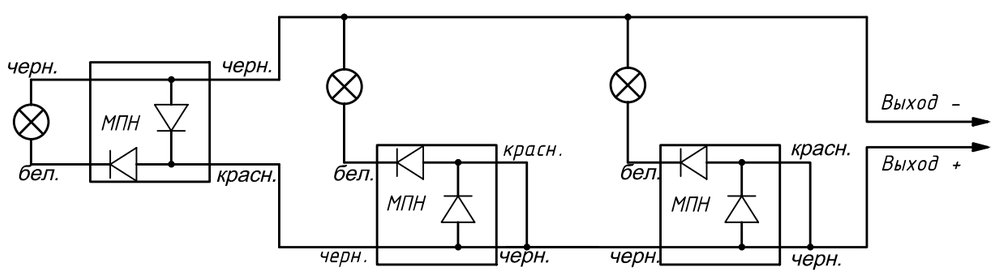
Типовая схема подключения звуковых оповещателей Маяк-24 ЗМ:



Типовая схема подключения адресных пожарных извещателей:



Типовая схема подключения световых оповещателей Молния-24 В:



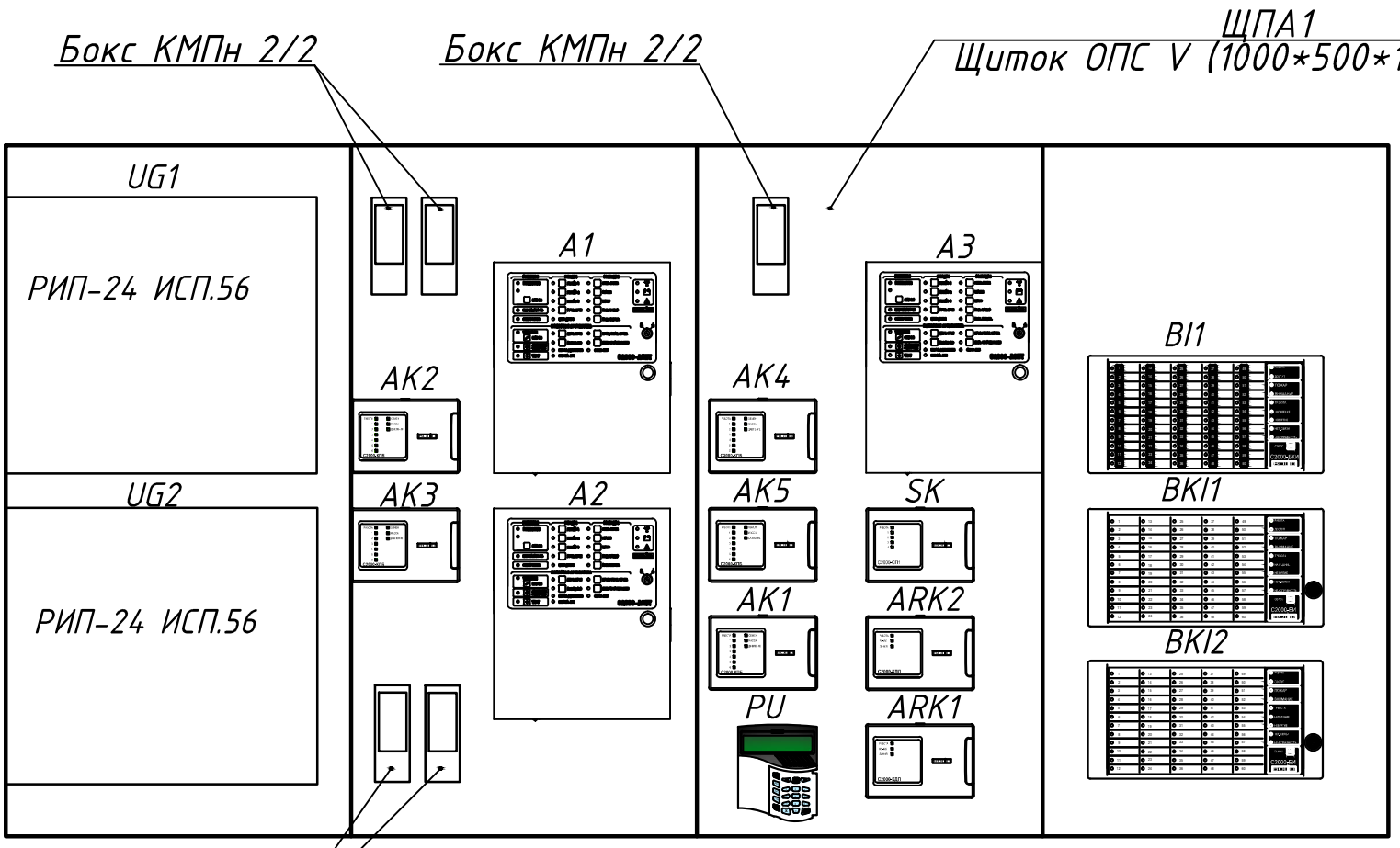
Изм.	Кол.у	Лист	N док	Подпись	Дата	21-34-ОПС.СОУЭ.АПТ			
Инженер		Мамеев				Автоматическая установка охранно-пожарной сигнализации. Система оповещения и управления эвакуацией. Автоматическое пожаротушение	Стадия	Лист	Листов
							ПД	6	
						Схемы подключения оборудования			

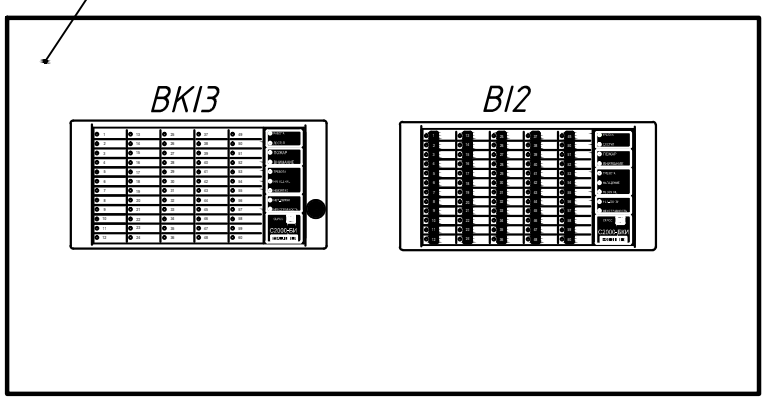
Взам. инв. №

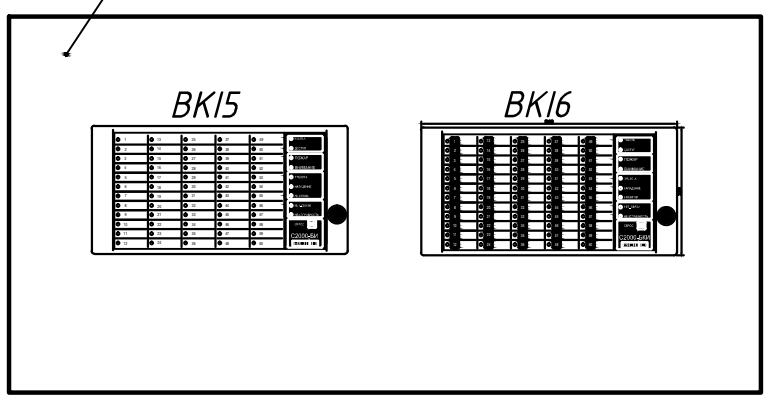
Подп. и дата

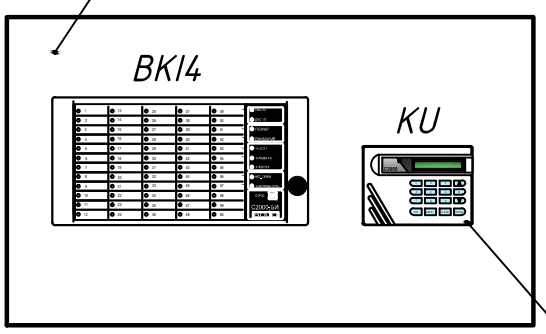
Инв.№ подл.

Формат А3

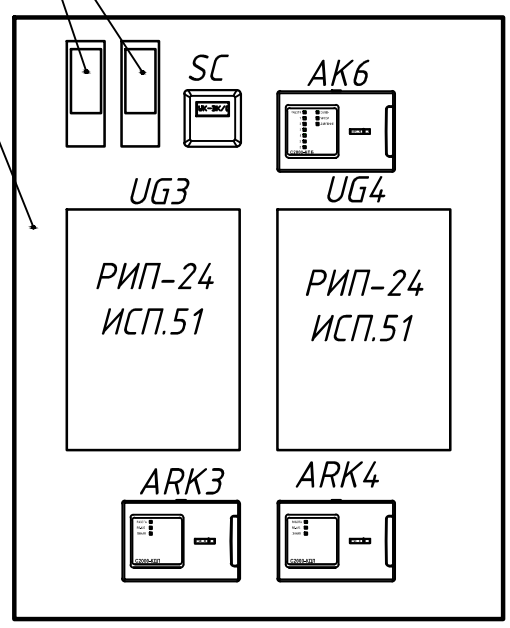








Вариант размещения клавиатуры на щитке



Взам. инв. N

Дата и подпись

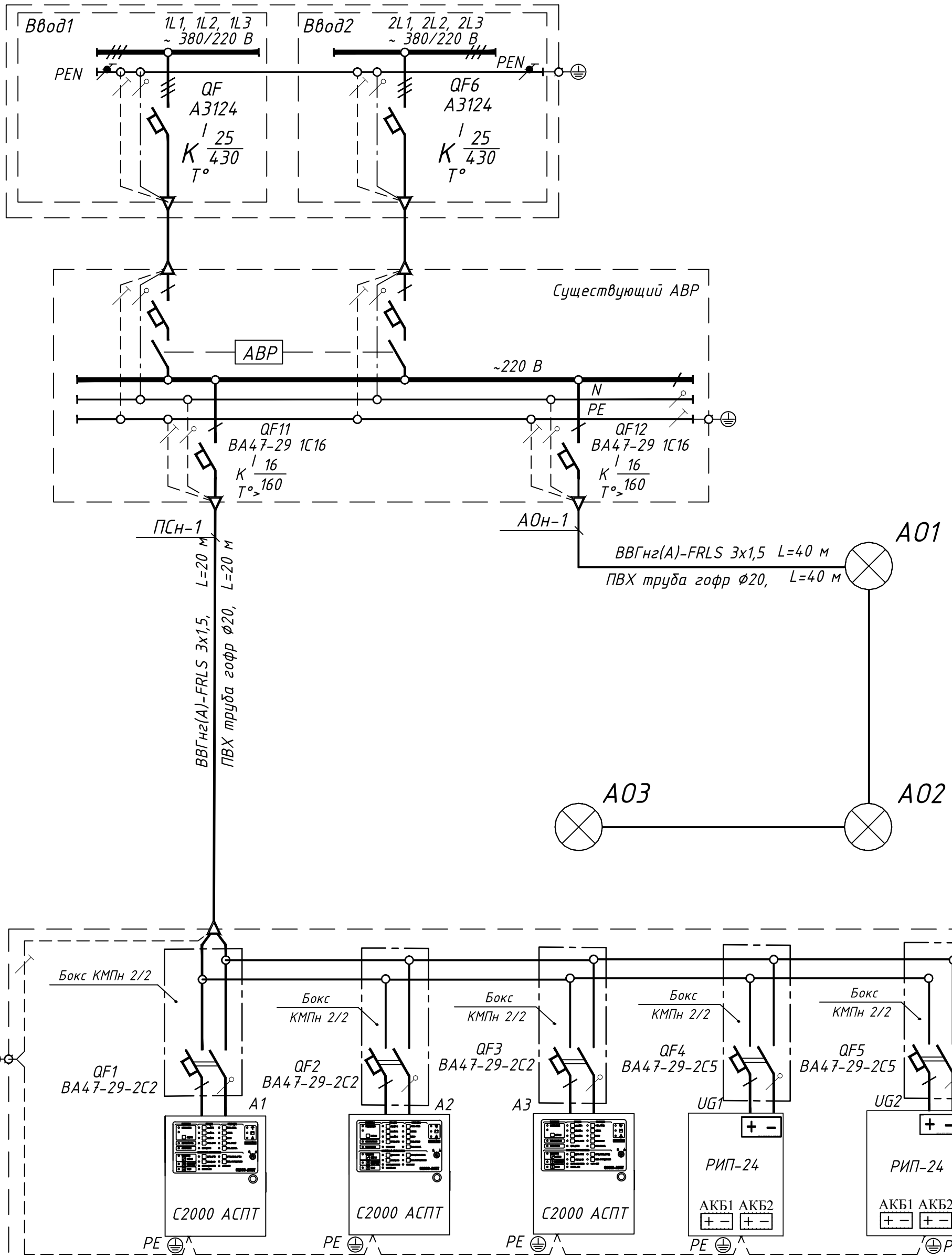
Инв. N подл.

Изм.	Кол.у	Лист	N док	Подпись	Дата
Инженер		Мамеев			

21-34-ОПС.СОУЭ.АПТ

Автоматическая установка охранно-пожарной сигнализации. Система оповещения и управления эвакуацией. Автоматическое пожаротушение	Стадия	Лист	Листов
	ПД	7	
Размещение оборудования в шкафах, на щитах ОПС			

Формат А3



Взам. инв. N

Дата и подпись

Инв. N подл.

Изм.	Кол.у	Лист	N док	Подпись	Дата
Инженер		Мамеев			

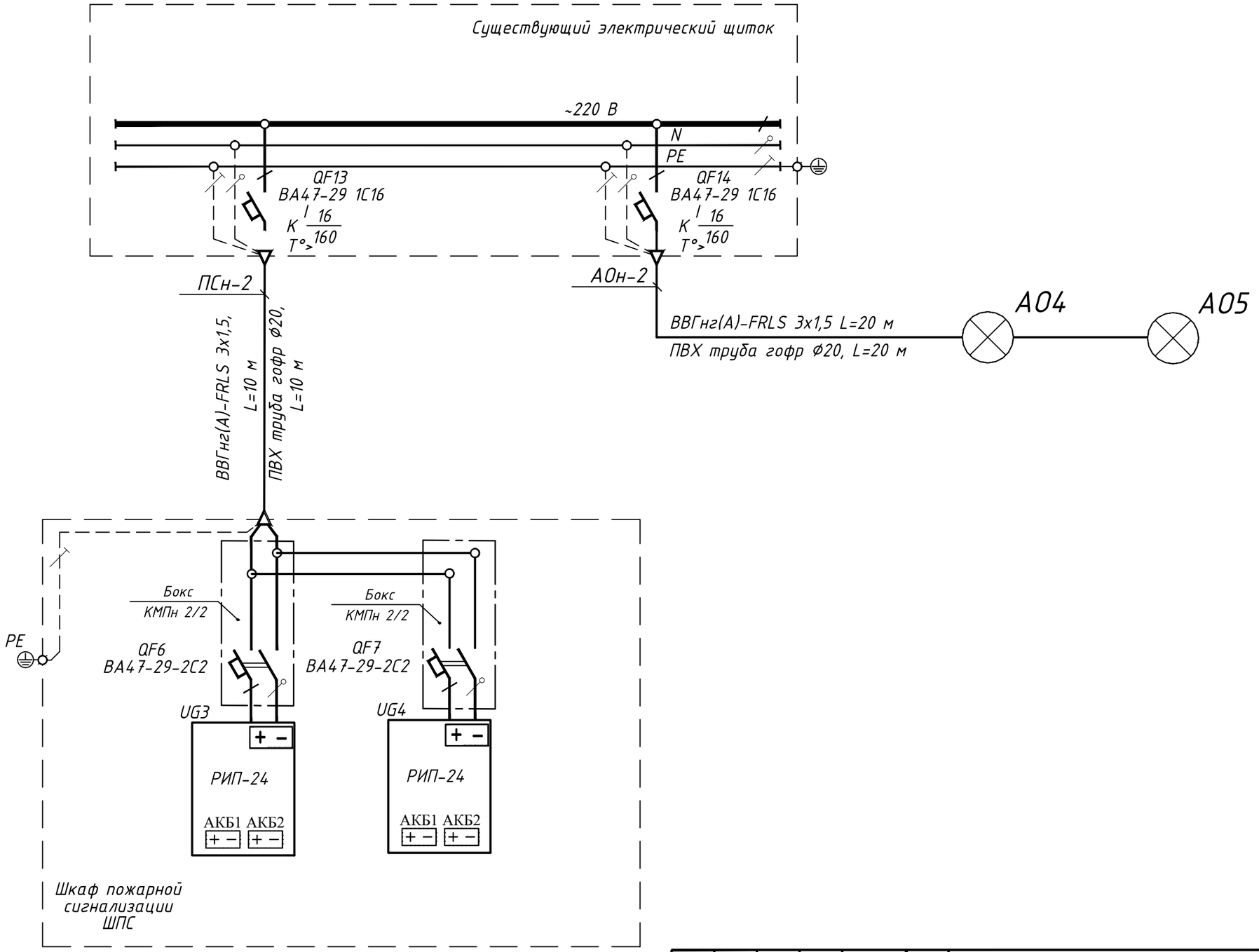
21-34-ОПС.СОУЭ.АПТ

Автоматическая установка охранно-пожарной сигнализации. Система оповещения и управления эвакуацией. Автоматическое пожаротушение

Стадия	Лист	Листов
ПД	8	

Схема электропитания установк ОПС, СОУЭ, АПТ в ПСПИ

Формат А3



						21-34-ОПС.СОУЭ.АПТ
Изм.	Кол.у	Лист	N док	Подпись	Дата	
Инженер		Мамеев				Автоматическая установка охранно-пожарной сигнализации. Система оповещения и управления эвакуацией. Автоматическое пожаротушение
						Схема электропитания установок ОПС, СОУЭ, АПТ в РНС

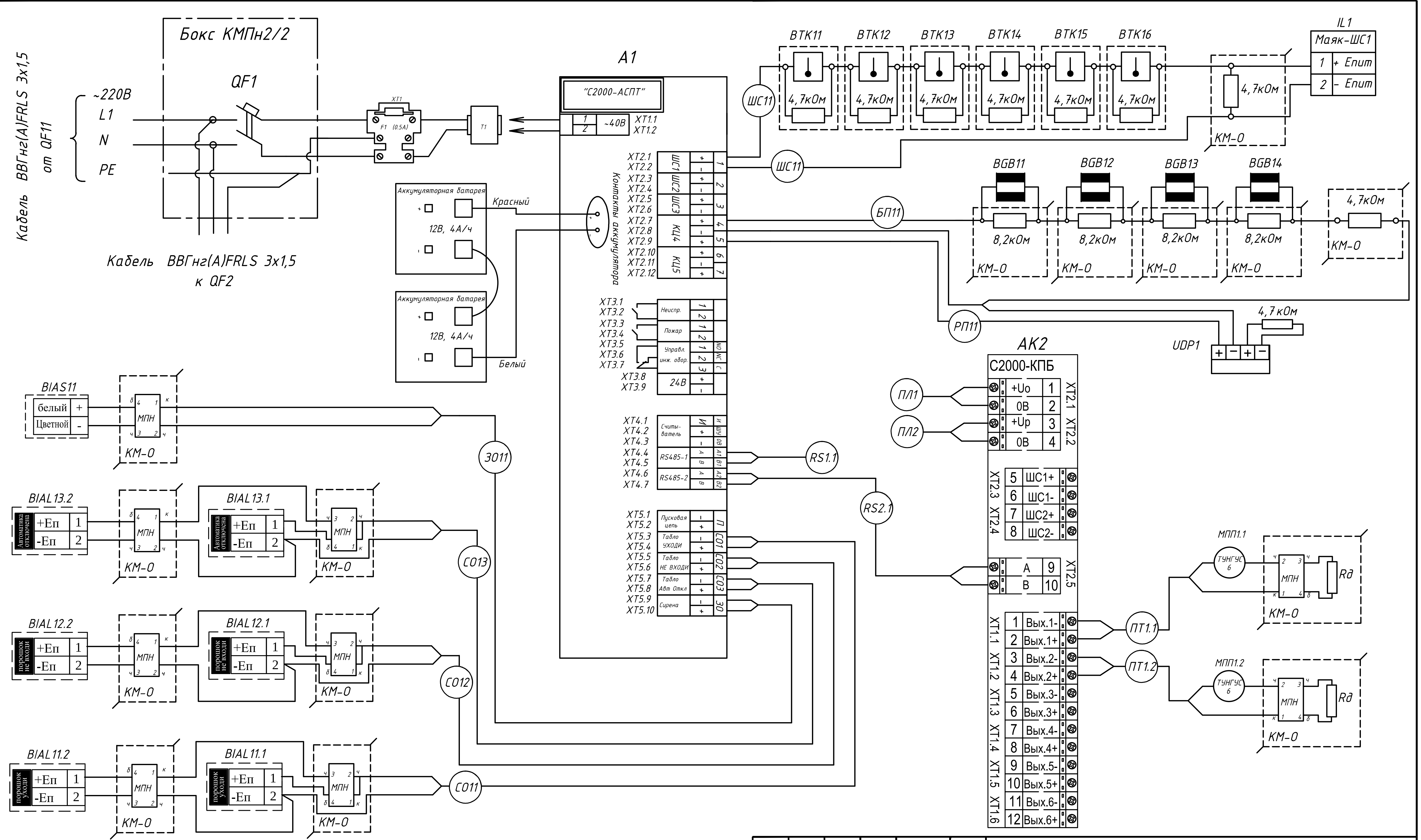
Стадия	Лист	Листов
ПД	9	

Взам. инв. №

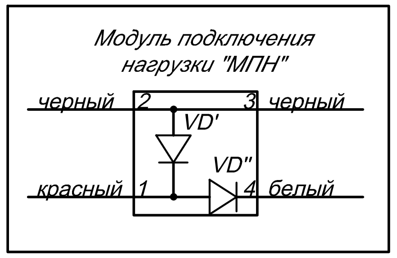
Подп. и дата

Инв.№ подл.

Формат А3



Бокс КМПн2/2
QF1
~220В
L1
N
PE
Кабель ВВГнг(А)FRLS 3х1,5 от QF11
Кабель ВВГнг(А)FRLS 3х1,5 к QF2
Аккумуляторная батарея
12В, 4А/ч
Красный
Белый
A1
"С2000-АСПТ"
~40В
XT1.1
XT1.2
Контакты аккумулятора
ШС1
ШС2
ШС3
КЦ4
КЦ5
Неиспр.
Пожар
Управл. инж. обор.
24В
Считыватель
RS485-1
RS485-2
Пусковая цепь
Табло УХОДИ
Табло НЕ ВХОДИ
Табло Авт Откл
Сирена
ВТК11
ВТК12
ВТК13
ВТК14
ВТК15
ВТК16
4,7кОм
IL1
Маяк-ШС1
+ Епит
- Епит
КМ-О
ШС11
BGB11
BGB12
BGB13
BGB14
8,2кОм
БП11
РП11
UDP1
AK2
С2000-КПБ
ПЛ1
ПЛ2
RS1.1
RS2.1
ПТ1.1
ПТ1.2
МПП1.1
МПП1.2
ТУНГУС 6
Rд
BIAS11
белый
Цветной
МПН
ЗО11
BIAL13.2
BIAL13.1
Автоматика отключена
+Еп
-Еп
СО13
BIAL12.2
BIAL12.1
порошок не входи
СО12
BIAL11.2
BIAL11.1
порошок уходи
СО11



Изм.	Кол.у	Лист	N док	Подпись	Дата	
Инженер		Мамеев				

21-34-ОПС.СОУЭ.АПТ

Автоматическая установка охранно-пожарной сигнализации. Система оповещения и управления эвакуацией. Автоматическое пожаротушение

Стадия	Лист	Листов
ПД	10	

Схемы подключения оборудования автоматического пожаротушения в Боксе №1

Взам. инв. №

Подп. и дата

Инв.№ подл.

Формат А3

Бокс КМПн2/2

QF2

~220В
L1
N
PE

Кабель ВВГнг(А)FRLS 3х1,5
от сущ. АВР

Кабель ВВГнг(А)FRLS 3х1,5
к QF3

XT1
F1 (0.5A)
T1

А2

"С2000-АСПТ"

1 2 ~40В XT1.1 XT1.2

Аккумуляторная батарея
12В, 4А/ч
Красный
Белый

Контакты аккумулятора

XT2.1 XT2.2 XT2.3 XT2.4 XT2.5 XT2.6 XT2.7 XT2.8 XT2.9 XT2.10 XT2.11 XT2.12
ШС1 ШС2 ШС3 КЦ4 КЦ5

XT3.1 XT3.2 XT3.3 XT3.4 XT3.5 XT3.6 XT3.7 XT3.8 XT3.9
Неиспр. Пожар Управл. инж. обор. 24В

XT4.1 XT4.2 XT4.3 XT4.4 XT4.5 XT4.6 XT4.7
Считы-ватель RS485-1 RS485-2
И Ш ОВ А1 В1 А2 В2

XT5.1 XT5.2 XT5.3 XT5.4 XT5.5 XT5.6 XT5.7 XT5.8 XT5.9 XT5.10
Пусковая цепь Табло УХОДИ Табло НЕ ВХОДИ Табло Авт Откл Сирена
П СО1 СО2 СО3 ЗО

ВТК21 ВТК22 ВТК23 ВТК24 ВТК25 ВТК26 ВТК27 ВТК28
4,7кОм

IL2
Маяк-ШС1
1 + Еп
2 - Еп

ШС21
БП21
РП21
UDP2

BGB21 BGB22 BGB23
8,2кОм
КМ-О

BIAS21
белый +
Цветной -
МПН
З021

BIAL23
Автоматика отключена
+Еп 1
-Еп 2
СО23

BIAL22
порошок не входит
+Еп 1
-Еп 2
СО22

BIAL21
порошок уходит
+Еп 1
-Еп 2
СО21

RS1.1
RS2.2

АК3
С2000-КПБ
XT2.1 XT2.2
+Uo 1
0В 2
+Up 3
0В 4

XT2.3 XT2.4
5 ШС1+
6 ШС1-
7 ШС2+
8 ШС2-

XT2.5
A 9
B 10

XT1.1 XT1.2 XT1.3 XT1.4 XT1.5 XT1.6
1 Вых.1-
2 Вых.1+
3 Вых.2-
4 Вых.2+
5 Вых.3-
6 Вых.3+
7 Вых.4-
8 Вых.4+
9 Вых.5-
10 Вых.5+
11 Вых.6-
12 Вых.6+

ПЛ1 ПЛ2
ПТ2.1 ПТ2.2 ПТ2.3 ПТ2.4

МПП2.1 МПП2.2 МПП2.3 МПП2.4
ТУНГУС 6
МПН
Rд
КМ-О

Модуль подключения нагрузки "МПН"
черный 2 3 черный
VD'
VD"
красный 1 4 белый

Взам. инв. №
Подп. и дата
Инв.№ подл.

Изм.	Кол.у	Лист	N док	Подпись	Дата
Инженер		Мамеев			

21-34-ОПС.СОУЭ.АПТ

Автоматическая установка охранно-пожарной сигнализации. Система оповещения и управления эвакуацией. Автоматическое пожаротушение

Стадия	Лист	Листов
ПД	11	

Схемы подключения оборудования автоматического пожаротушения в Боксе №2

Формат А3

Кабель ВВГнг(А)FRLS 3х1,5
от сущ. АВР

Бокс КМПн2/2

QF3

~220В
L1
N
PE

Кабель ВВГнг(А)FRLS 3х1,5
к QF4

XT1
F1 (0.5A)
T1

А3

"С2000-АСПТ"

1 2 ~40В XT1.1 XT1.2

Аккумуляторная батарея
12В, 4А/ч
Красный

Аккумуляторная батарея
12В, 4А/ч
Белый

Контакты аккумулятора

XT2.1 XT2.2 ШС1 1
XT2.3 XT2.4 ШС2 2
XT2.5 XT2.6 ШС3 3
XT2.7 XT2.8 XT2.9 КЦ4 4 5
XT2.10 XT2.11 XT2.12 КЦ5 6 7

XT3.1 XT3.2 Неиспр. 1 2
XT3.3 XT3.4 Пожар 1 2
XT3.5 XT3.6 XT3.7 Управл. инж. обор. 1 2 3 NO NC C
XT3.8 XT3.9 24В + -

XT4.1 XT4.2 XT4.3 Считы-ватель И + - И Шф 0В
XT4.4 XT4.5 RS485-1 A B A1 B1
XT4.6 XT4.7 RS485-2 A B A2 B2

XT5.1 XT5.2 Пусковая цепь - + П
XT5.3 XT5.4 Табло УХОДИ - + СО1
XT5.5 XT5.6 Табло НЕ ВХОДИ - + СО2
XT5.7 XT5.8 Табло Авт Откл - + СО3
XT5.9 XT5.10 Сирена - + ЗО

ВТН31 ВТН32 ВТН33 ВТН34

ШС31

4.7кОм

ШС31

BGB31 BGB32

БП31

8,2кОм 8,2кОм 4,7кОм
КМ-О КМ-О КМ-О

РП31

4,7кОм

UD3.1 UDP3.2

АК4

С2000-КПБ

XT2.1 XT2.2
+Uo 1
0В 2
+Up 3
0В 4

XT2.3 XT2.4
5 ШС1+
6 ШС1-
7 ШС2+
8 ШС2-

XT2.5
A 9
B 10

XT1.1 XT1.2 XT1.3 XT1.4 XT1.5 XT1.6
1 Вых.1-
2 Вых.1+
3 Вых.2-
4 Вых.2+
5 Вых.3-
6 Вых.3+
7 Вых.4-
8 Вых.4+
9 Вых.5-
10 Вых.5+
11 Вых.6-
12 Вых.6+

ПЛ1
ПЛ2

RS1.1

RS3.2

ПТ3.1
ПТ3.2

МПП3.1
ТУНГУС 6
МПН
Rд
КМ-О

МПП3.2
ТУНГУС 6
МПН
Rд
КМ-О

BIAS31
белый +
Цветной -
МПН
КМ-О
ЗО31

BIAL33
Автоматика отключена
+Еп 1
-Еп 2
МПН
КМ-О
СО33

BIAL32
порошок не ВХОДИ
+Еп 1
-Еп 2
МПН
КМ-О
СО32

BIAL31
порошок УХОДИ
+Еп 1
-Еп 2
МПН
КМ-О
СО31

Модуль подключения нагрузки "МПН"
черный 2 3 черный
VD'
VD"
красный 1 4 белый

Изм.	Кол.у	Лист	N док	Подпись	Дата
Инженер		Мамеев			

21-34-ОПС.СОУЭ.АПТ

Автоматическая установка охранно-пожарной сигнализации. Система оповещения и управления эвакуацией. Автоматическое пожаротушение

Стадия	Лист	Листов
ПД	12	

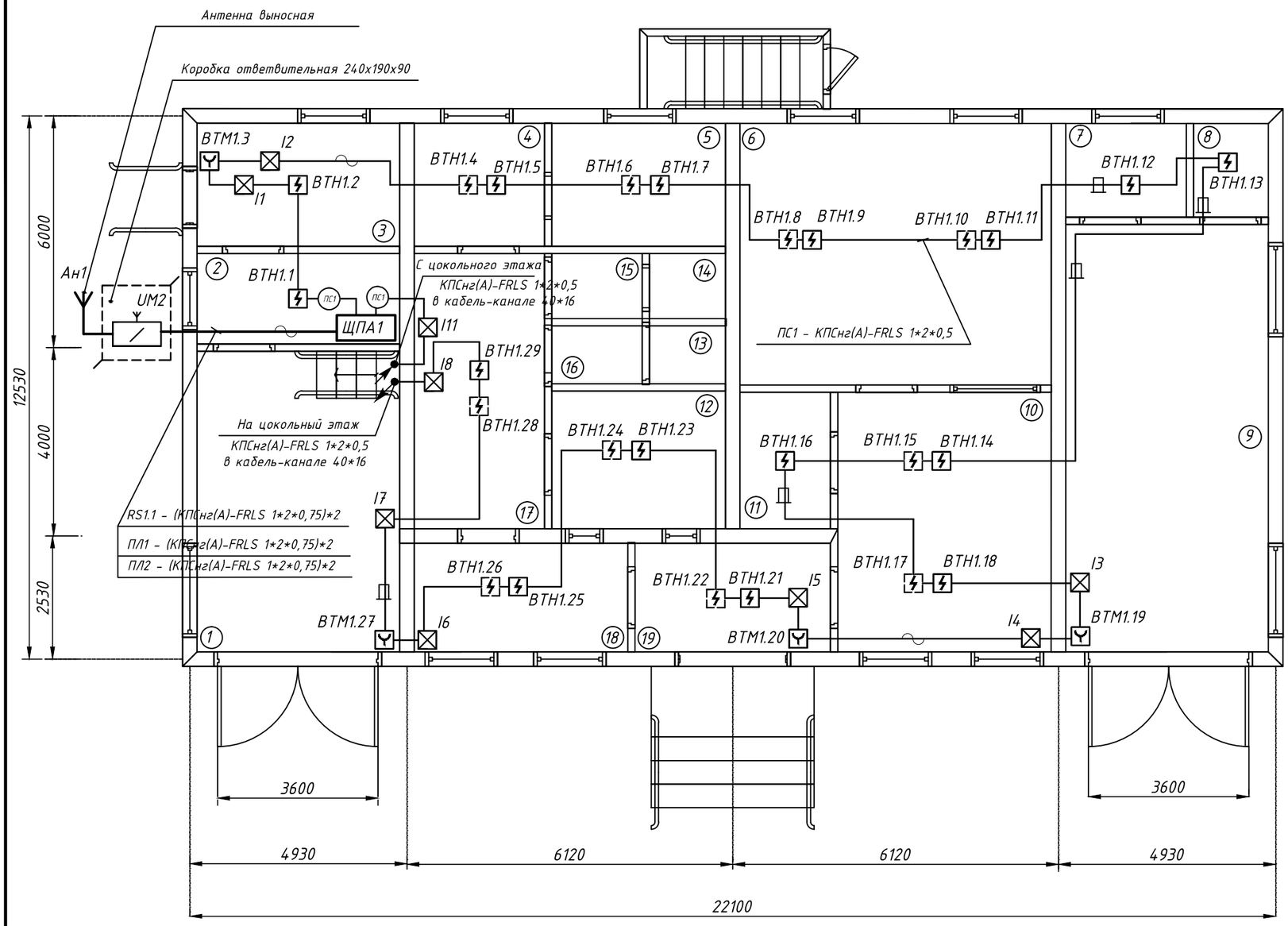
Схемы подключения оборудования автоматического пожаротушения в Котельной

Взам. инв. №

Подп. и дата

Инв.№ подл.

Формат А3



Экспликация помещений

Номер	Наименование	Площадь, м²
1	Бокс №1	28,529
2	Электроремонтный участок	11,367
3	Электрощитовая	14,149
4	Комната отдыха	8,617
5	Комната приема пищи	10,134
6	Операторская	35,711
7	Кладовая №1	7,188
8	Коната хранения хоз инвентаря	3,326
9	Бокс №2	43,827
10	Группа эксплуатации станций МСМ	22,378
11	Комната хранения расходных материалов и инструмента	3,744
12	Комната хранения вещей персонала станций МСМ	8,009
13	Туалет	1,223
14	Душевая	1,640
15	Душевая	2,593
16	Умывальник	1,892
17	Коридор	14,029
18	Холл	8,281
19	Входной тамбур	5,562

Взам. инв. №

Подп. и дата

Инв.№ подл.

Изм.	Кол.у	Лист	N док	Подпись	Дата
Инженер		Мамеев			

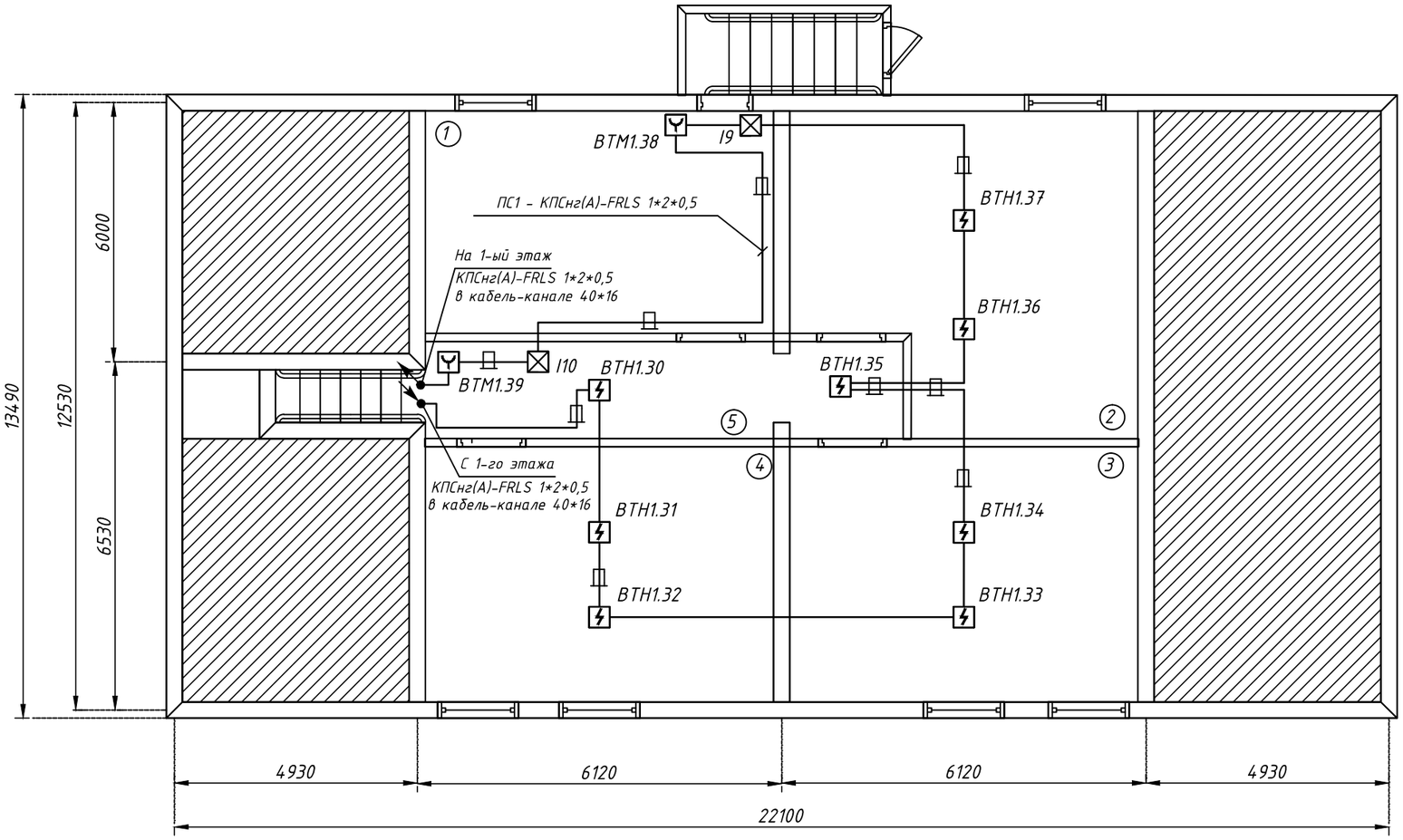
21-34-ОПС.СОУЭ.АПТ

Автоматическая установка охранно-пожарной сигнализации. Система оповещения и управления эвакуацией. Автоматическое пожаротушение

Стадия	Лист	Листов
ПД	13	

План прокладки кабельных трасс и расстановки оборудования ПС в ПСПИ 1 этаж

Формат А3



Экспликация помещений

Номер	Наименование	Площадь, м²
1	Котельная	29,081
2	Кладовая №2	35,191
3	Комната хранения ЗИП	26,262
4	Кладовая №3	26,078
5	Коридор цоколного этажа	13,126

Взам. инв. №

Подп. и дата

Инв.№ подл.

Изм.	Кол.у	Лист	N док	Подпись	Дата
Инженер		Мамеев			

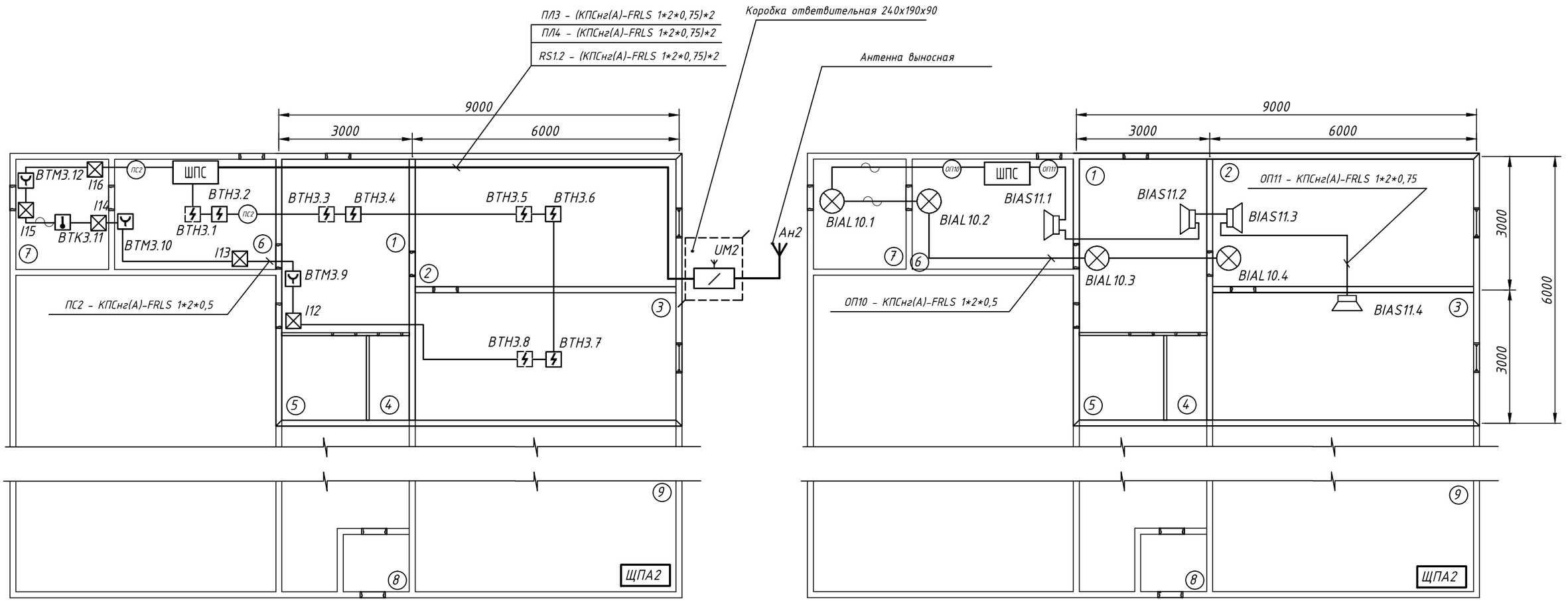
21-34-ОПС.СОУЭ.АПТ

Автоматическая установка охранно-пожарной сигнализации. Система оповещения и управления эвакуацией. Автоматическое пожаротушение

Стадия	Лист	Листов
ПД	14	

План прокладки кабельных трасс и расстановки оборудования ПС в ПСПИ цокольный этаж

Формат А3



Экспликация помещений

Номер	Наименование	Площадь, м²
1	Холл	9,740
2	Операторская	13,730
3	Комната для приготовления, хранения и измерения проб	14,461
4	Туалет	1,339
5	Комната для умывания	3,022
6	Коридор	10,8
7	Тамбур	4,4
8	Тамбур	4,4
9	Помещение дежурного	12,00

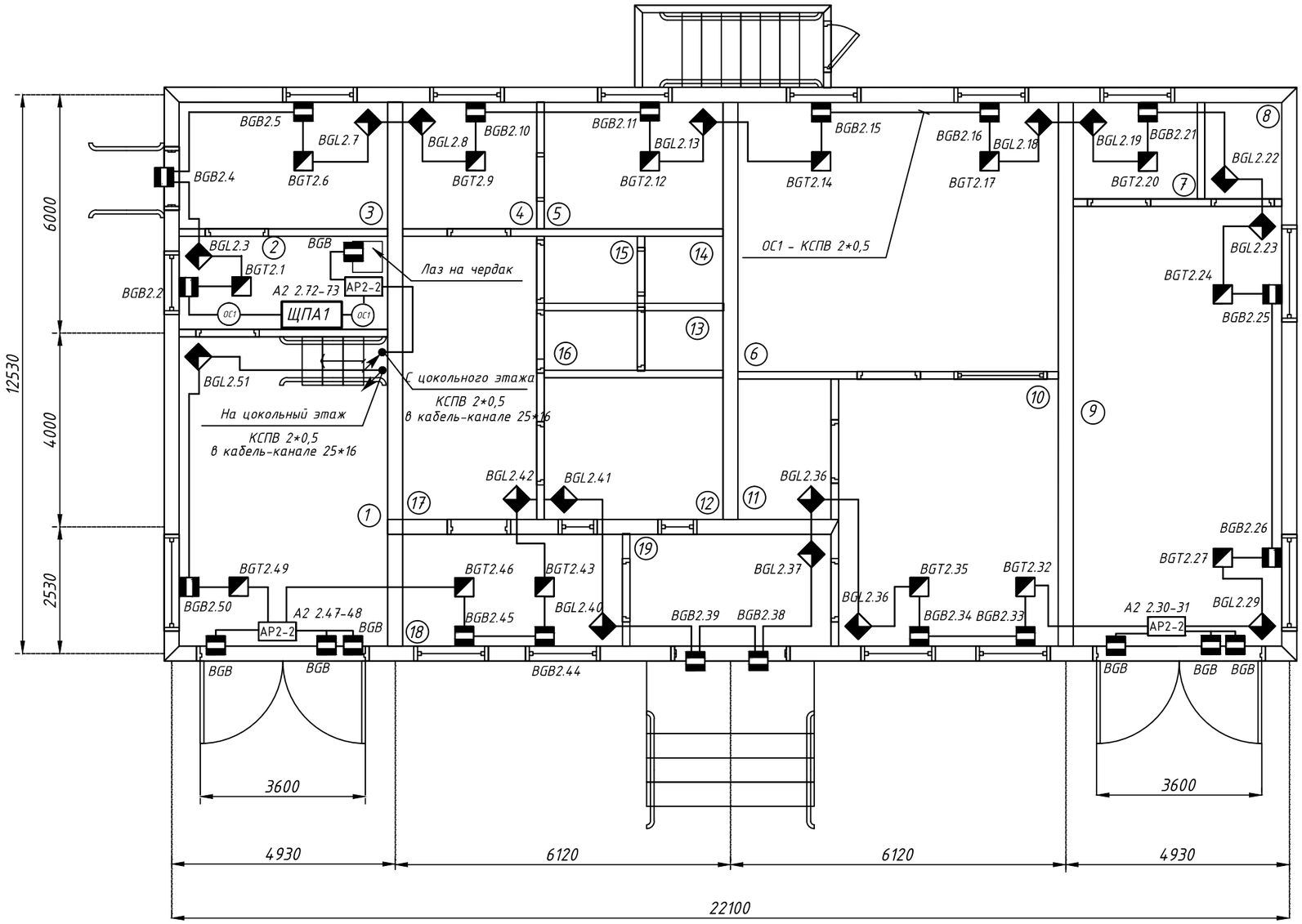
Взам. инв. №

Подп. и дата

Инв.№ подл.

Изм.	Кол.у	Лист	N док	Подпись	Дата	21-34-ОПС.СОУЭ.АПТ			
Инженер		Мамеев				Автоматическая установка охранно-пожарной сигнализации. Система оповещения и управления эвакуацией. Автоматическое пожаротушение	Стадия	Лист	Листов
							ПД	15	
						План прокладки кабельных трасс и расстановки оборудования ПС и СОУЭ в РНС RN59			

Формат А3



Экспликация помещений

Номер	Наименование	Площадь, м²
1	Бокс №1	28,529
2	Электроремонтный участок	11,367
3	Электрощитовая	14,149
4	Комната отдыха	8,617
5	Комната приема пищи	10,134
6	Операторская	35,711
7	Кладовая №1	7,188
8	Коната хранения хоз инвентаря	3,326
9	Бокс №2	43,827
10	Группа эксплуатации станций МСМ	22,378
11	Комната хранения расходных материалов и инструмента	3,744
12	Комната хранения вещей персонала станций МСМ	8,009
13	Туалет	1,223
14	Душевая	1,640
15	Душевая	2,593
16	Умывальник	1,892
17	Коридор	14,029
18	Холл	8,281
19	Входной тамбур	5,562

Взам. инв. №

Подп. и дата

Инв.№ подл.

Изм.	Кол.у	Лист	N док	Подпись	Дата
Инженер		Мамеев			

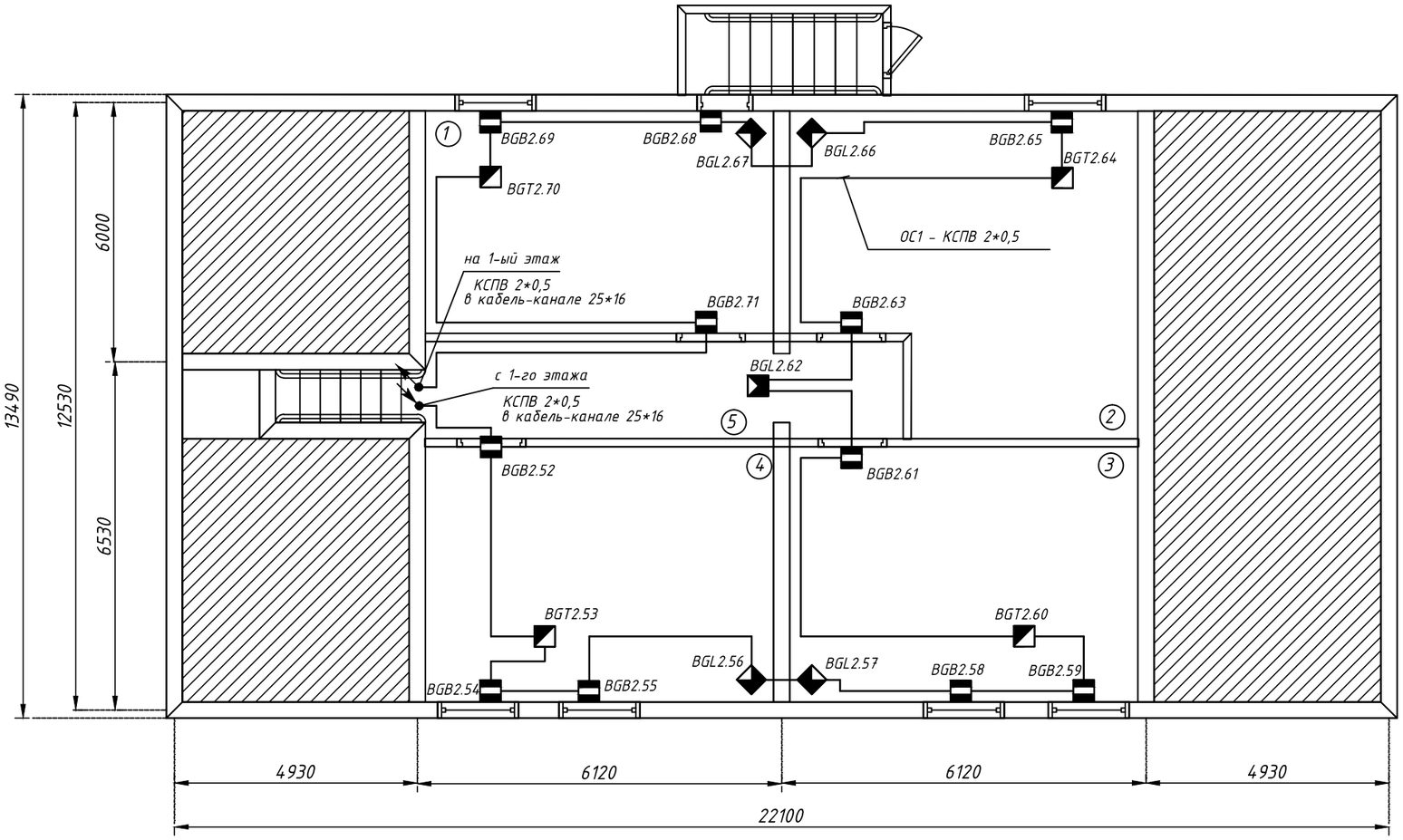
21-34-ОПС.СОУЭ.АПТ

Автоматическая установка охранно-пожарной сигнализации. Система оповещения и управления эвакуацией. Автоматическое пожаротушение

Стадия	Лист	Листов
ПД	16	

План прокладки кабельных трасс и расстановки оборудования ОС в ПСПИ 1 этаж

Формат А3



Экспликация помещений

Номер	Наименование	Площадь, м²
1	Котельная	29,081
2	Кладовая №2	35,191
3	Комната хранения ЗИП	26,262
4	Кладовая №3	26,078
5	Коридор цоколного этажа	13,126

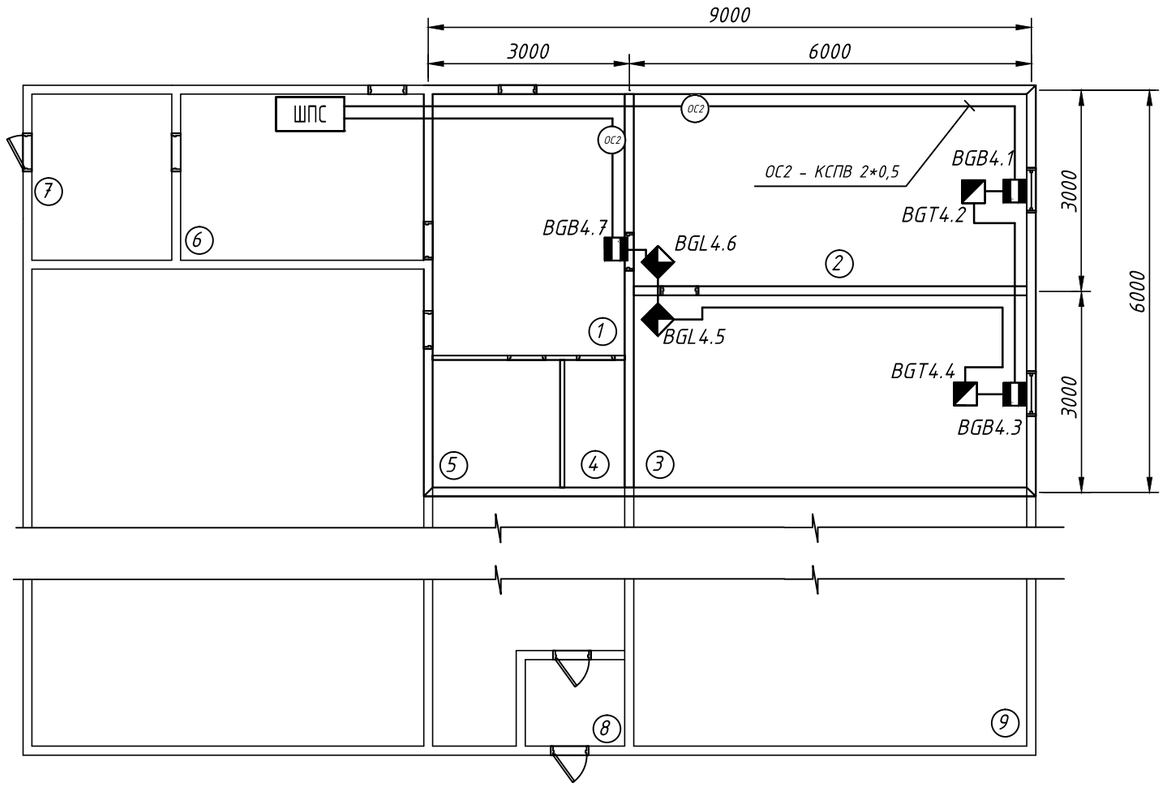
Взам. инв. №

Подп. и дата

Инв.№ подл.

Изм.	Кол.у	Лист	N док	Подпись	Дата	21-34-ОПС.СОУЭ.АПТ			
Инженер		Мамеев				Автоматическая установка охранно-пожарной сигнализации. Система оповещения и управления эвакуацией. Автоматическое пожаротушение	Стадия	Лист	Листов
							ПД	17	
						План прокладки кабельных трасс и расстановки оборудования ОС в ПСПИ цокольный этаж			

Формат А3



Экспликация помещений

Номер	Наименование	Площадь, м²
1	Холл	9,740
2	Операторская	13,730
3	Комната для приготовления, хранения и измерения проб	14,461
4	Туалет	1,339
5	Комната для умывания	3,022
6	Коридор	10,8
7	Тамбур	4,4
8	Тамбур	4,4
9	Помещение дежурного	12,00

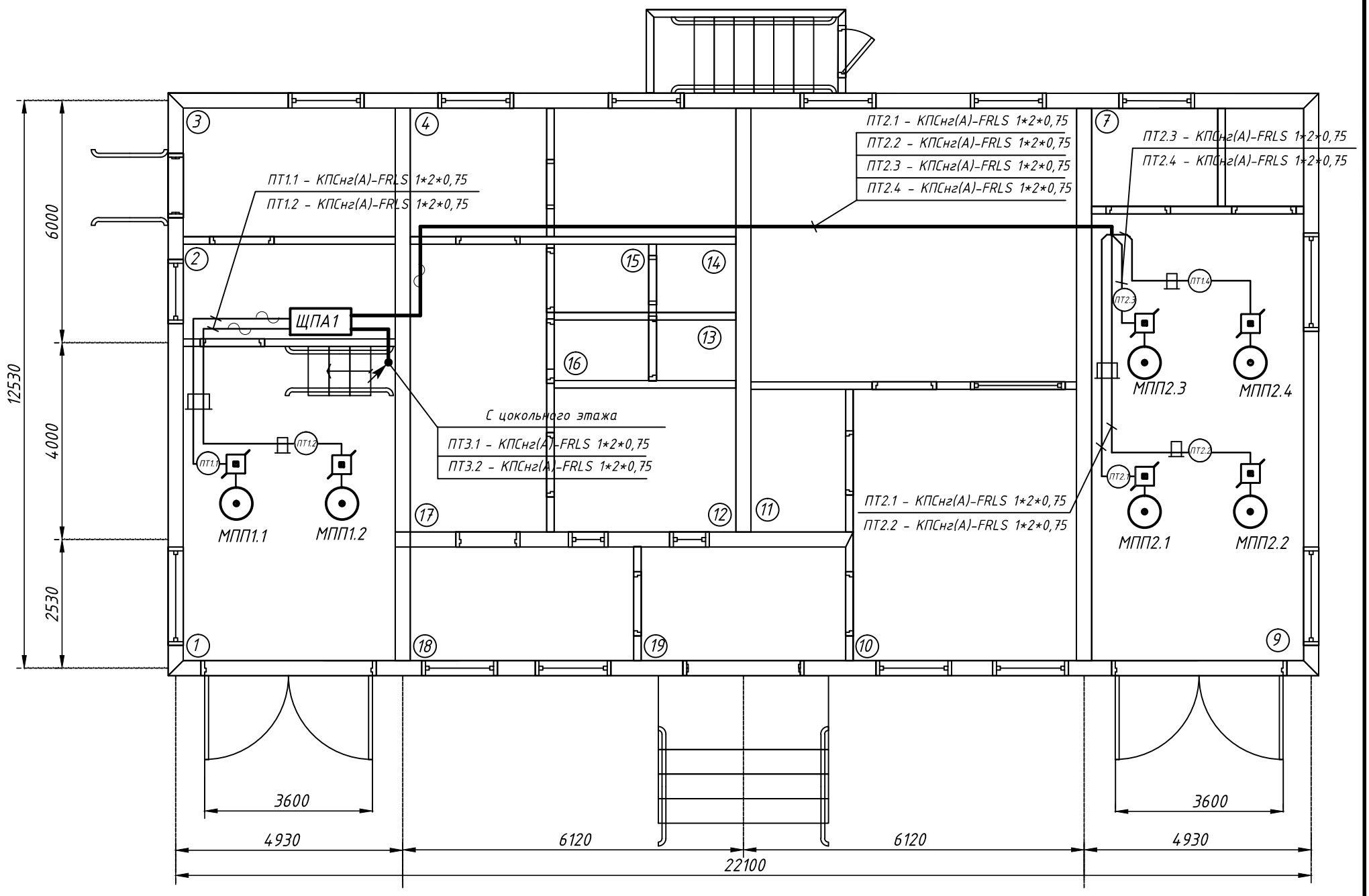
Взам. инв. №

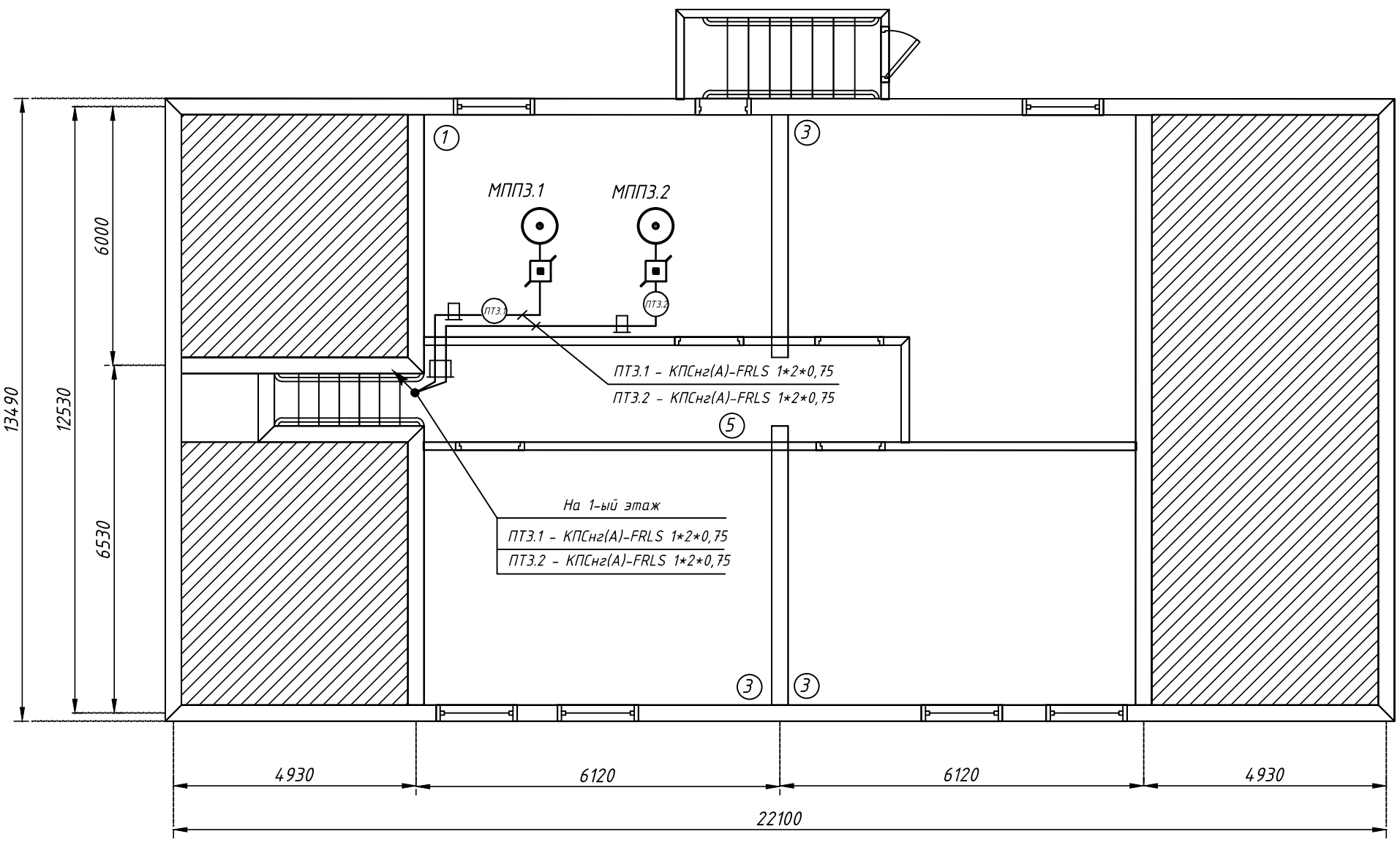
Подп. и дата

Инв.№ подл.

Изм.	Кол.у	Лист	N док	Подпись	Дата	21-34-ОПС.СОУЭ.АПТ			
Инженер		Мамеев				Автоматическая установка охранно-пожарной сигнализации. Система оповещения и управления эвакуацией. Автоматическое пожаротушение	Стадия	Лист	Листов
							ПД	18	
						План прокладки кабельных трасс и расстановки оборудования ОС в РНС RN59			

Формат А3





Изм.	Кол.у	Лист	N док	Подпись	Дата
Инженер		Мамеев			

21-34-ОПС.СОУЭ.АПТ

Автоматическая установка охранно-пожарной сигнализации. Система оповещения и управления эвакуацией. Автоматическое пожаротушение

Стадия	Лист	Листов
ПД	19	

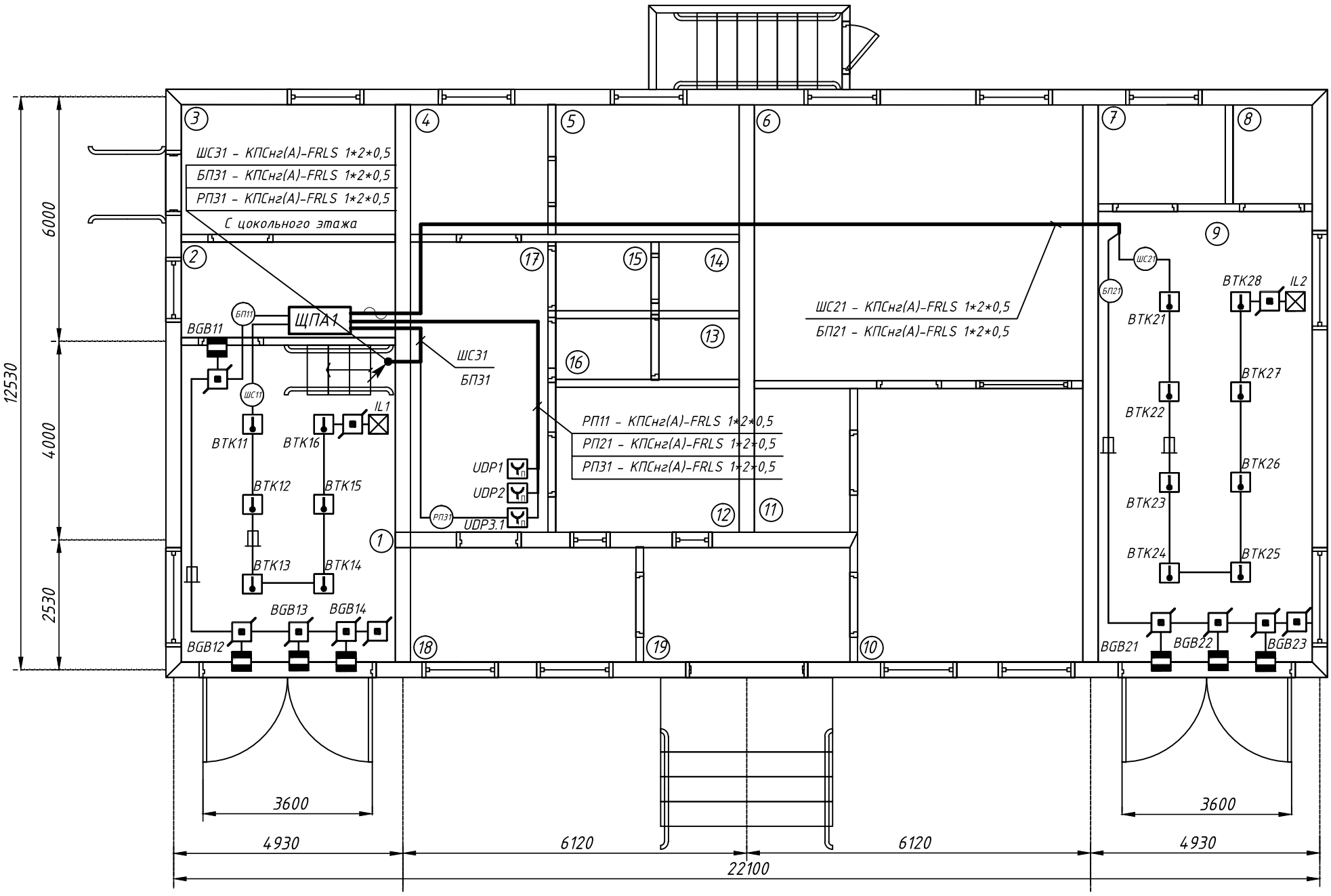
План прокладки кабельных трасс и расстановки оборудования АПТ ПСПИ. Модули пожаротушения

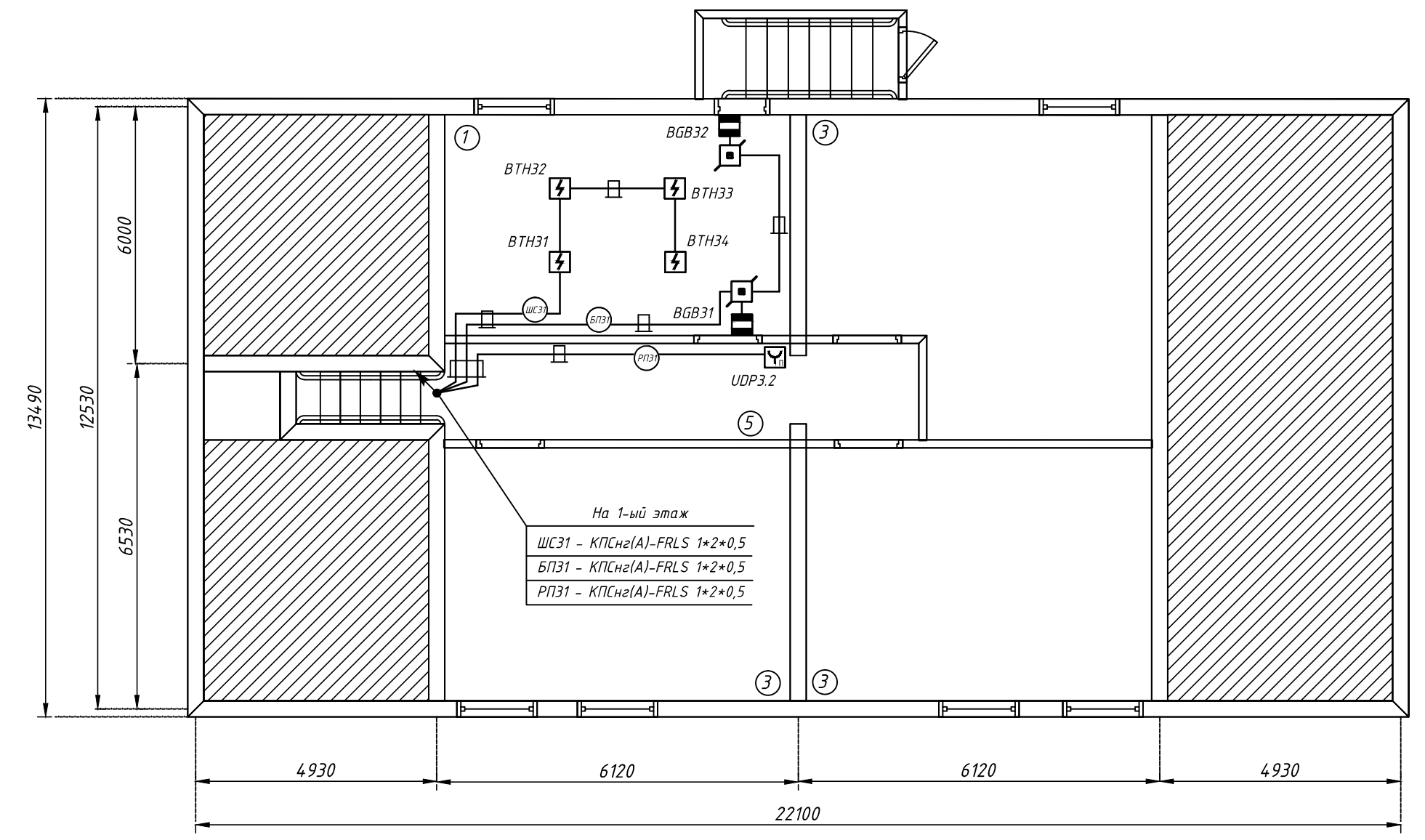
Взам. инв. N

Дата и подпись

Инв. N подл.

Формат А3





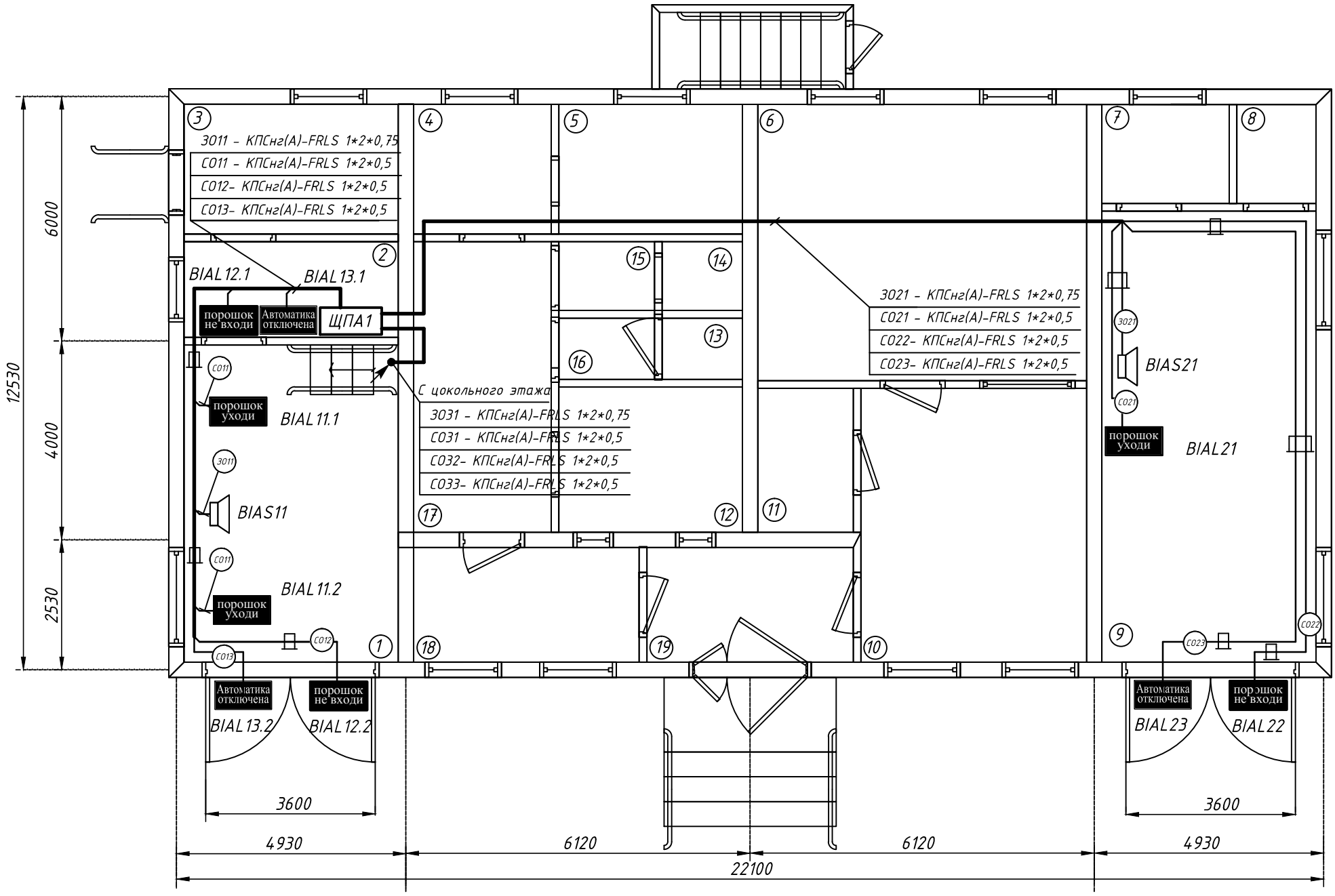
						21-34-ОПС.СОУЭ.АПТ		
Изм.	Кол.у	Лист	N док	Подпись	Дата			
Инженер		Мамеев				Автоматическая установка охранно-пожарной сигнализации. Система оповещения и управления эвакуацией. Автоматическое пожаротушение	Стадия: ПД	Лист: 20 / Листов:
						План прокладки кабельных трасс и расстановки оборудования АПТ ПСПИ. Пожарные извещатели		

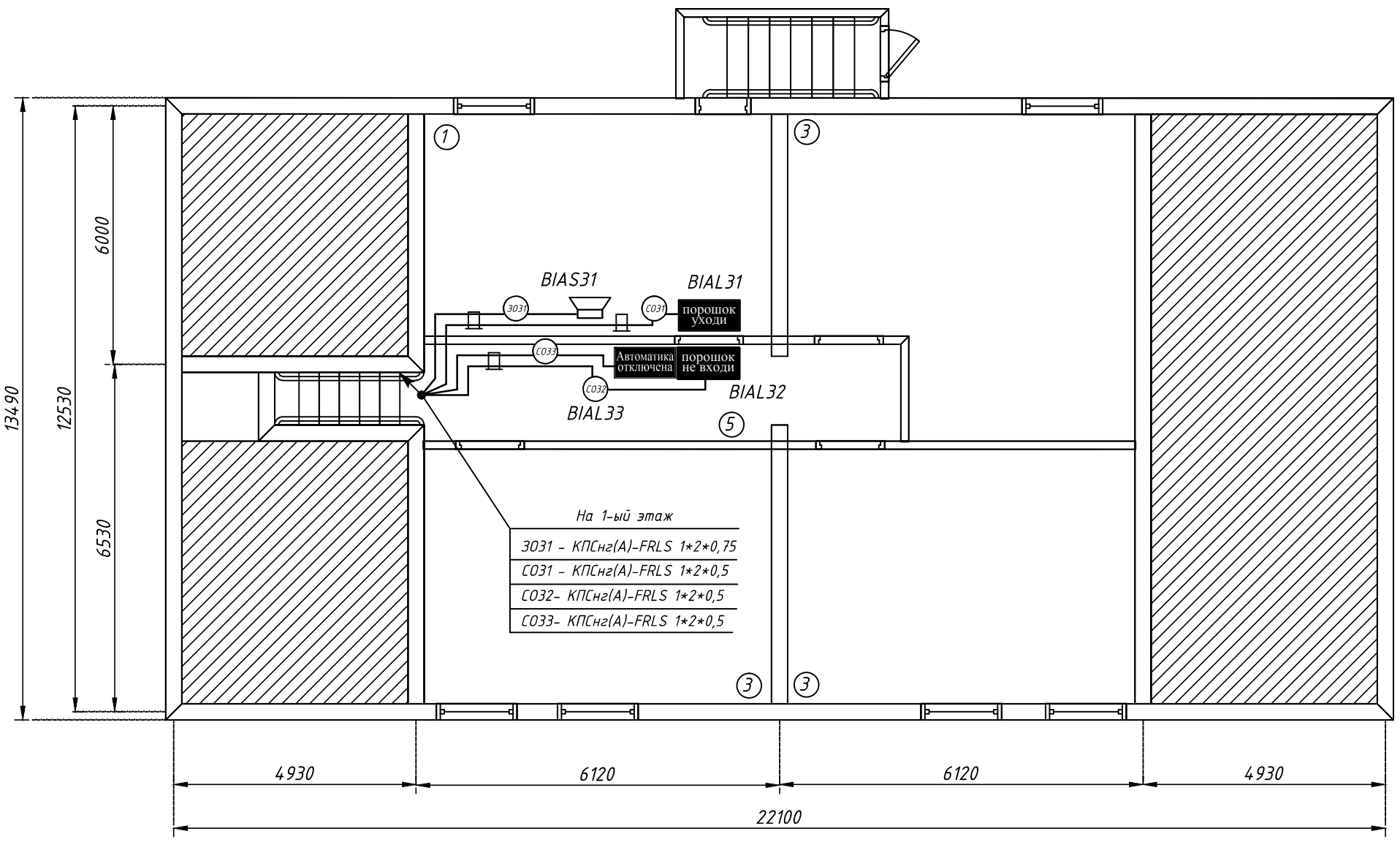
Взам. инв. N

Дата и подпись

Инв. N подл.

Формат А3





Взам. инв. N

Дата и подпись

Инв. N подл.

Изм.	Кол.у	Лист	N док	Подпись	Дата
Инженер		Мамеев			

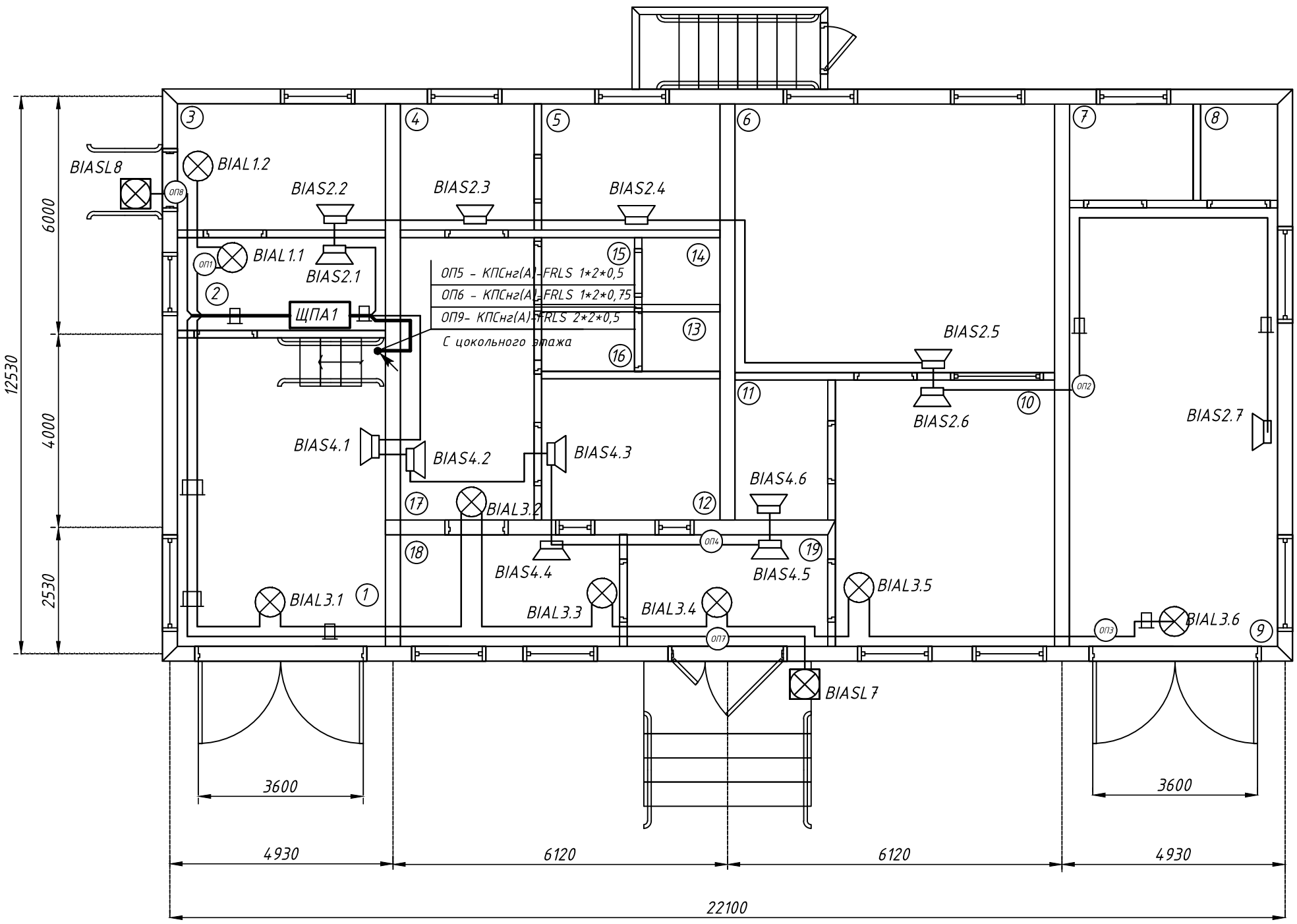
21–34–ОПС.СОУЭ.АПТ

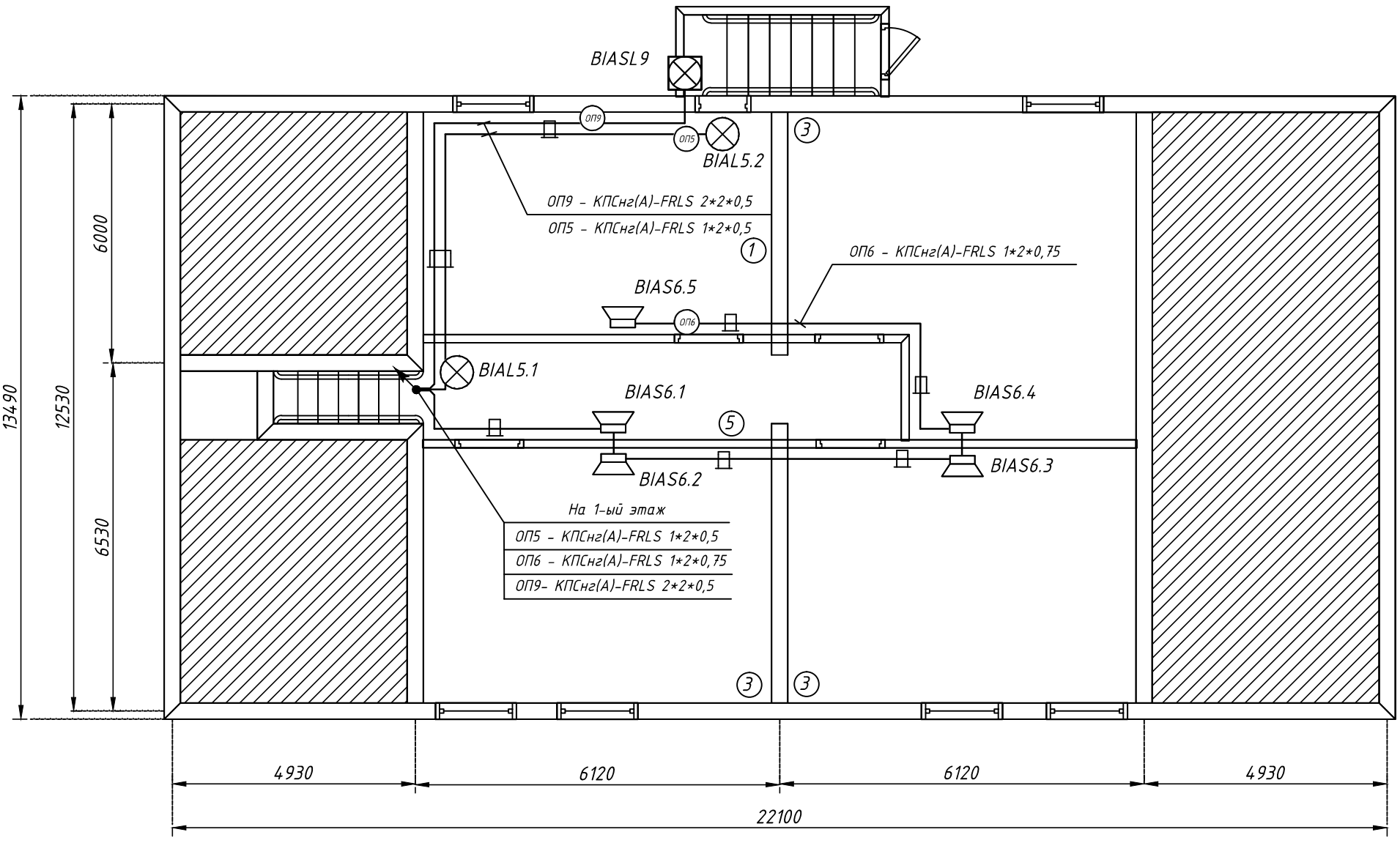
Автоматическая установка охранно–пожарной сигнализации. Система оповещения и управления эвакуацией. Автоматическое пожаротушение

Стадия	Лист	Листов
ПД	21	

План прокладки кабельных трасс и расстановки оборудования АПТ ПСПИ. Оповещение

Формат А3





Взам. инв. N

Дата и подпись

Инв. N подл.

Изм.	Кол.у	Лист	N док	Подпись	Дата
Инженер		Мамеев			

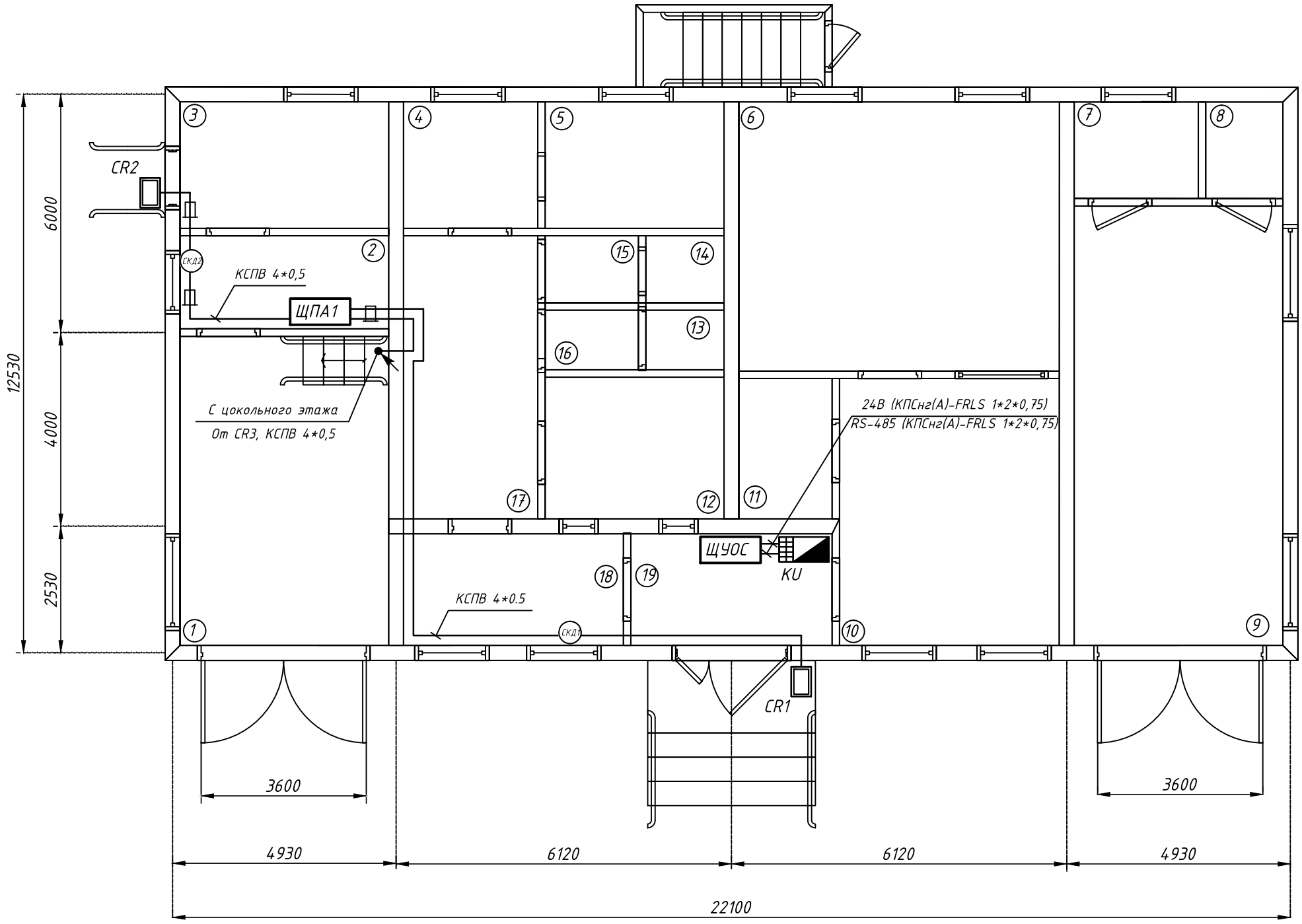
21-34-ОПС.СОУЭ.АПТ

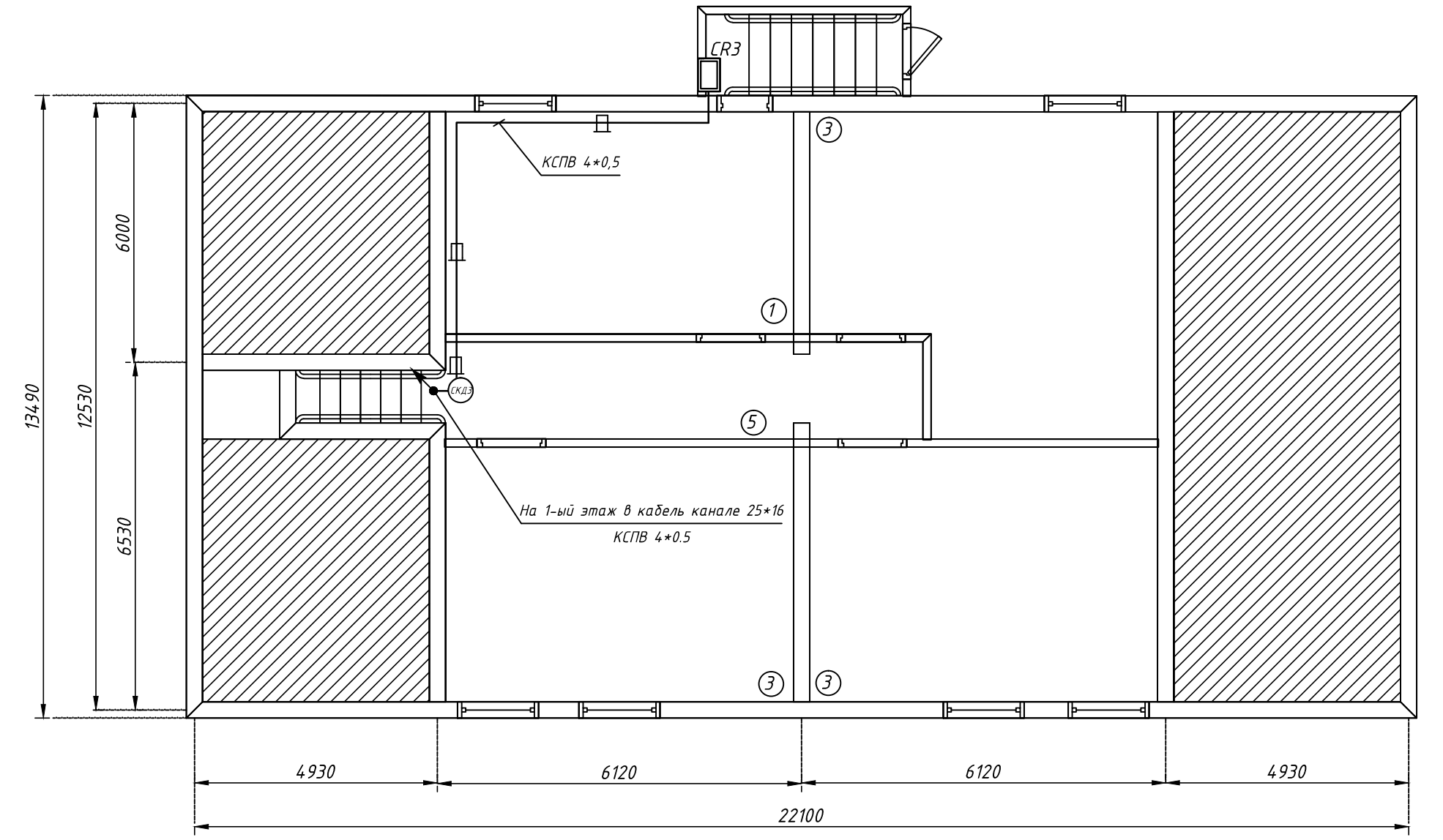
Автоматическая установка охранно-пожарной сигнализации. Система оповещения и управления эвакуацией. Автоматическое пожаротушение

Стадия	Лист	Листов
ПД	22	

План прокладки кабельных трасс и расстановки оборудования СОУЭ ПСПИ

Формат А3





Взам. инв. N

Дата и подпись

Инв. N подл.

Изм.	Кол.у	Лист	N док	Подпись	Дата
Инженер		Мамеев			

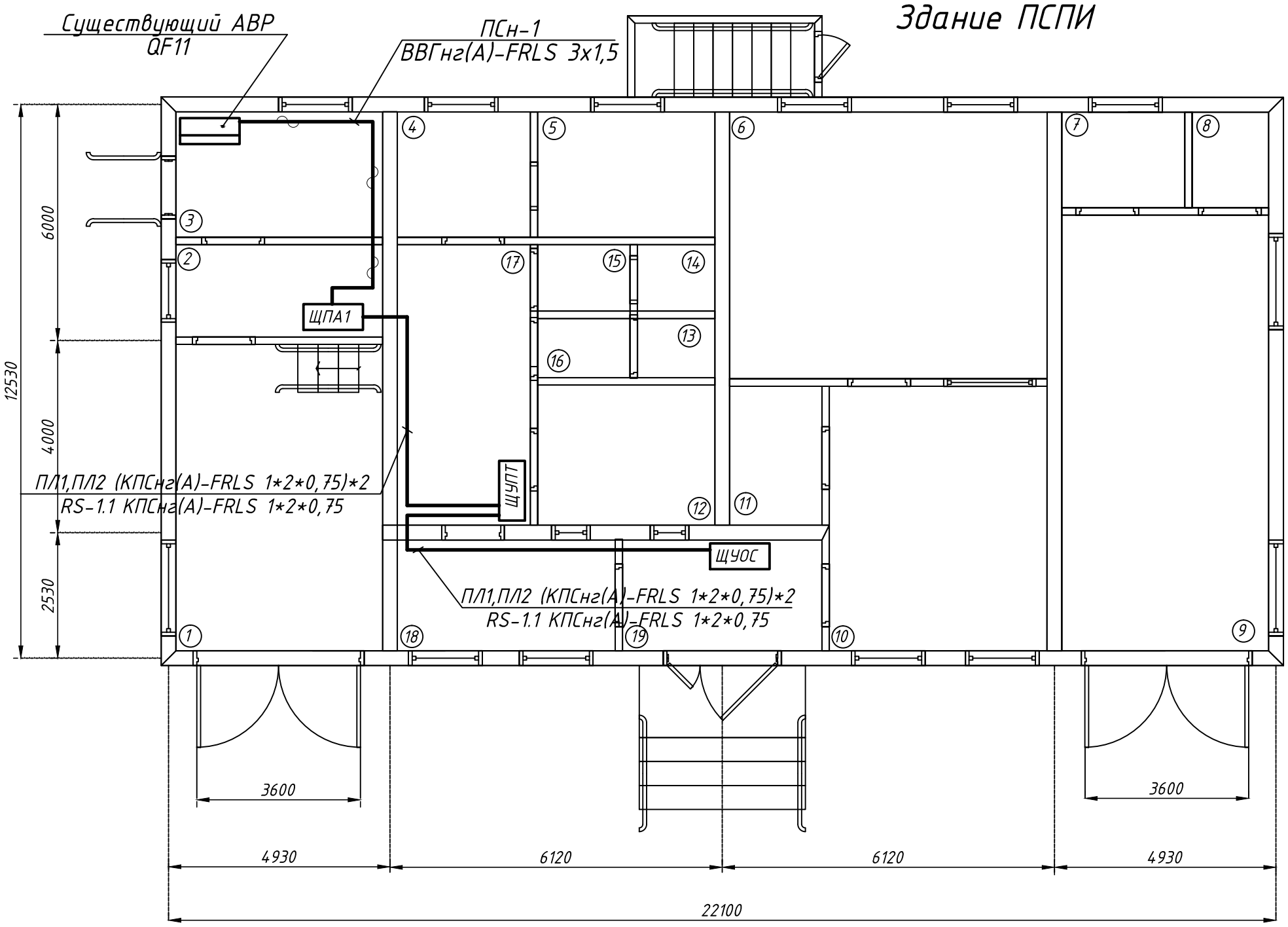
21-34-ОПС.СОУЭ.АПТ

Автоматическая установка охранно-пожарной сигнализации. Система оповещения и управления эвакуацией. Автоматическое пожаротушение

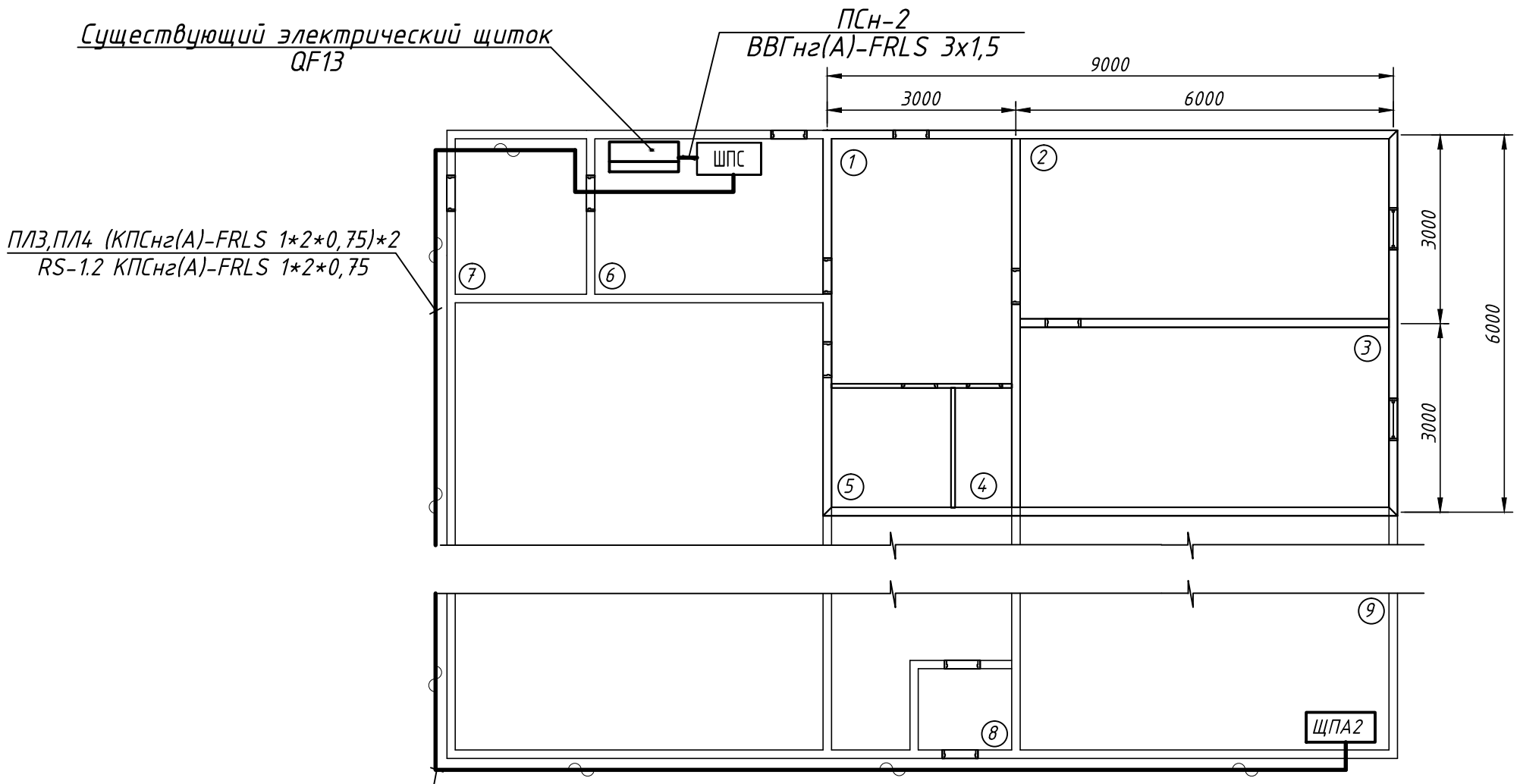
Стадия	Лист	Листов
ПД	23	

План прокладки кабельных трасс и расстановки оборудования СКУД ПСПИ.

Формат А3



Фрагмент здания Радио нуклидной станции

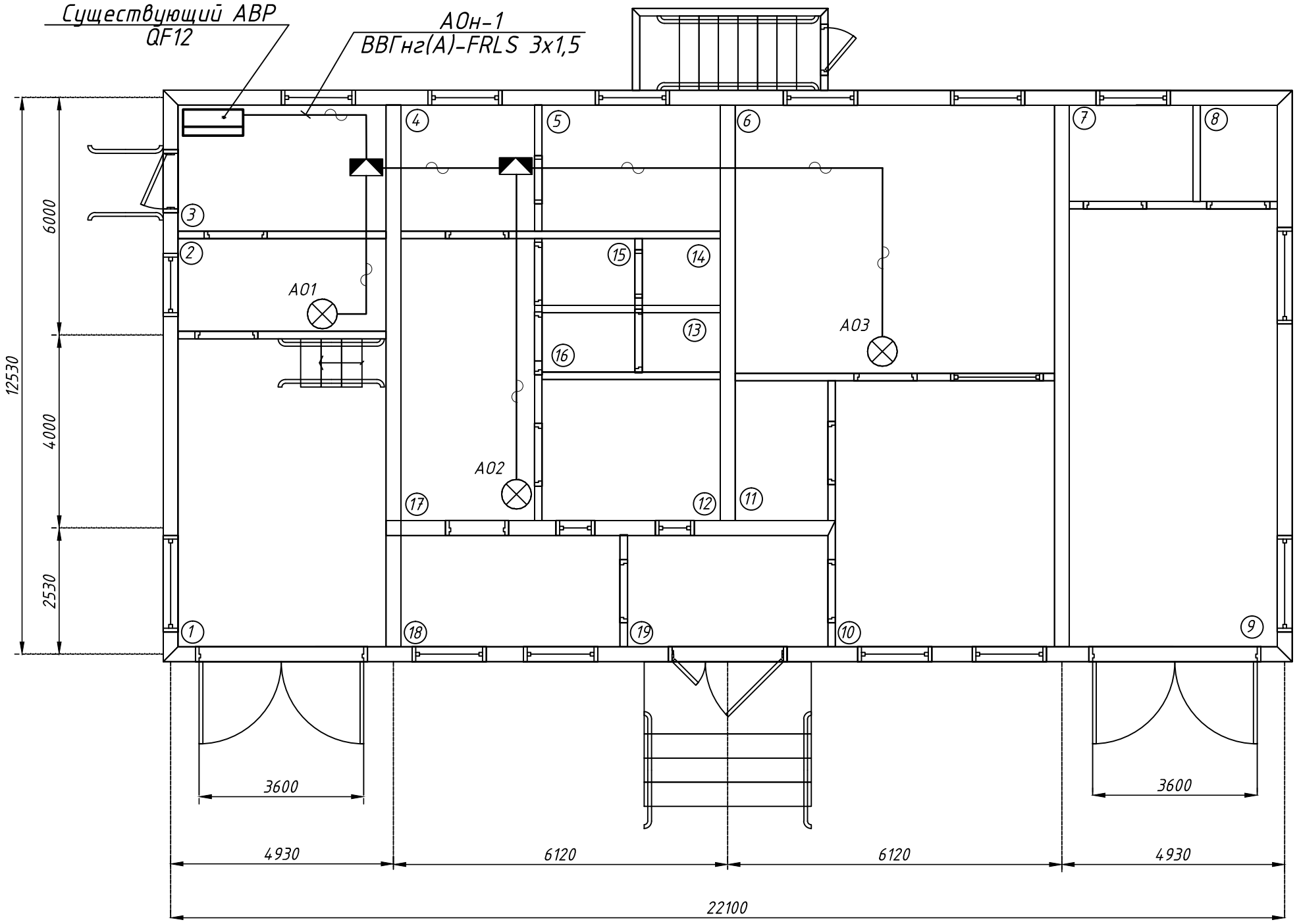


Изм.	Кол.у	Лист	N док	Подпись	Дата	21-34-ОПС.СОУЭ.АПТ			
Инженер		Мамеев				Автоматическая установка охранно-пожарной сигнализации. Система оповещения и управления эвакуацией. Автоматическое пожаротушение	Стадия	Лист	Листов
							ПД	24	
						План прокладки кабельных трасс электропитания и интерфейсной линии			

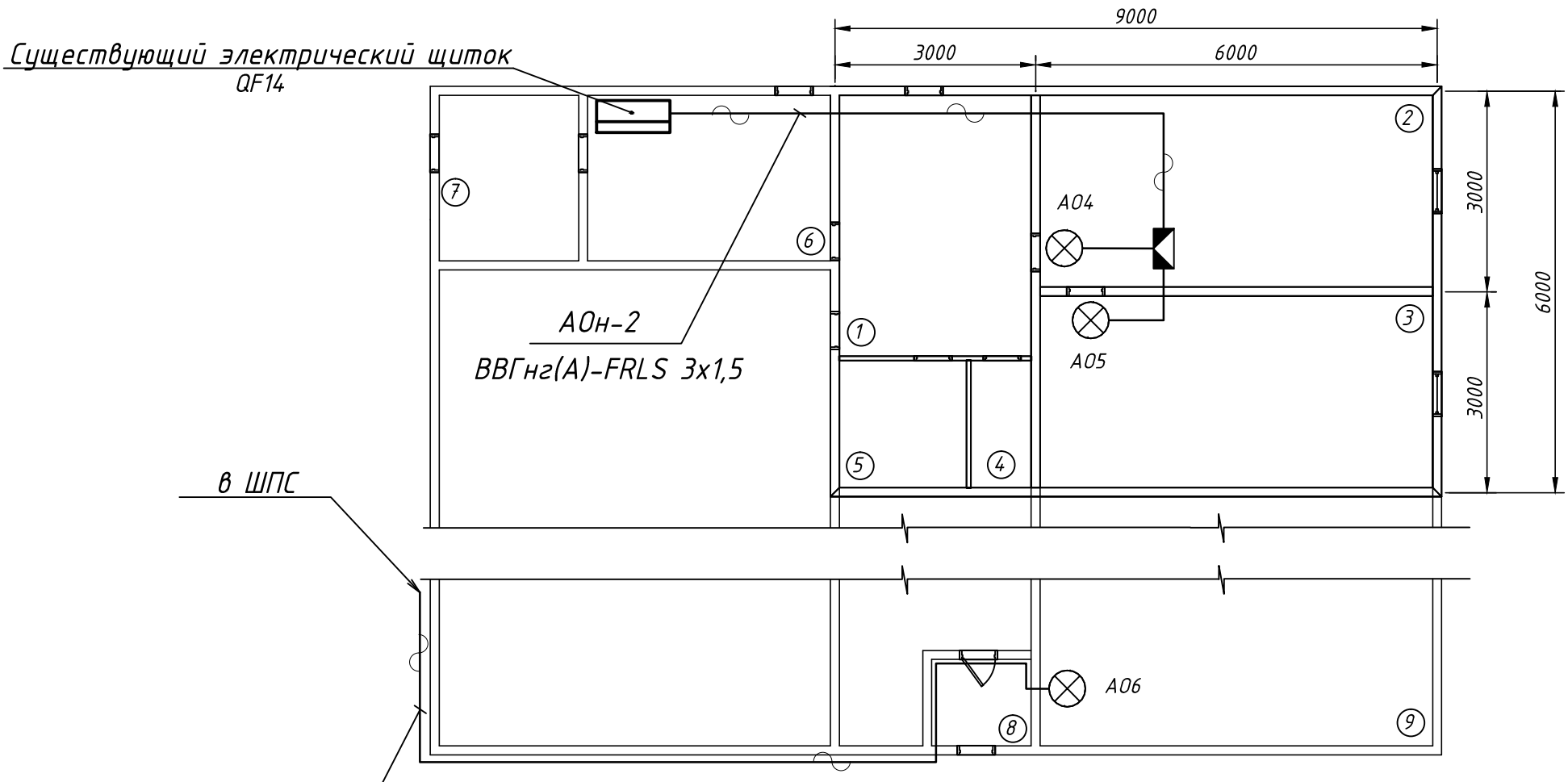
Взам. инв. N | Дата и подпись | Инв. N подл.

Формат А3

Здание ПСПИ



Фрагмент здания Радио нуклидной станции



Изм.	Кол.у	Лист	N док	Подпись	Дата	21-34-ОПС.СОУЭ.АПТ			
Инженер		Мамеев				Автоматическая установка охранно-пожарной сигнализации. Система оповещения и управления эвакуацией. Автоматическое пожаротушение	Стадия	Лист	Листов
							ПД	25	
						План прокладки кабельных трасс и расстановки оборудования аварийного освещения			

Взам. инв. N

Дата и подпись

Инв. N подл.

Формат А3

№ п/п	Маркировка кабеля	Трасса		Марка	Кол-во жил и сечение	Длина, м
		Откуда	Куда			
1	2	3	4	5	6	7
1	ПЛ1	UG1	BKI4	КПСнг(А)-FRLS	1*2*0,75	30
2	ПЛ2	UG2	BKI4	КПСнг(А)-FRLS	1*2*0,75	30
3	ПЛ3	UG3	BKI6	КПСнг(А)-FRLS	1*2*0,75	50
4	ПЛ4	UG4	BKI6	КПСнг(А)-FRLS	1*2*0,75	50
5	RS1.1	UG4	BKI4	КПСнг(А)-FRLS	1*2*0,75	30
6	RS1.2	UG3	BKI6	КПСнг(А)-FRLS	1*2*0,75	50
7	ПС1	ARK1	ARK1	КПСнг(А)-FRLS	1*2*0,5	120
8	ПС2	ARK3	ARK3	КПСнг(А)-FRLS	1*2*0,5	50
9	ОС1	ARK2	ARK2	КСПВ	2*0,5	200
10	ОС2	ARK4	ARK4	КСПВ	2*0,5	50
11	ОП1	АК1	BIAL1.2	КПСнг(А)-FRLS	1*2*0,5	30
12	ОП2	АК1	BIAS2.7	КПСнг(А)-FRLS	1*2*0,75	50
13	ОП3	АК1	BIAL3.6	КПСнг(А)-FRLS	1*2*0,5	50
14	ОП4	АК1	BIAS4.6	КПСнг(А)-FRLS	1*2*0,75	50
15	ОП5	АК1	BIAL5.2	КПСнг(А)-FRLS	1*2*0,5	50
16	ОП6	АК1	BIAS6.5	КПСнг(А)-FRLS	1*2*0,75	50
17	ОП7	АК5	BIASL7	КПСнг(А)-FRLS	2*2*0,5	20
18	ОП8	АК5	BIASL8	КПСнг(А)-FRLS	2*2*0,5	50
19	ОП9	АК5	BIASL9	КПСнг(А)-FRLS	2*2*0,5	50
20	ОП10	АК6	BIAL10.4	КПСнг(А)-FRLS	1*2*0,5	30
21	ОП11	АК6	BIAS11.4	КПСнг(А)-FRLS	1*2*0,75	40
22	RS2.1	А1	АК2	КПСнг(А)-FRLS	1*2*0,75	5
23	RS2.2	А2	АК3	КПСнг(А)-FRLS	1*2*0,75	5
24	RS2.3	А3	АК4	КПСнг(А)-FRLS	1*2*0,75	5
25	ПТ1.1	АК2	МПП1.1	КПСнг(А)-FRLS	1*2*0,75	20
26	ПТ1.2	АК2	МПП1.2	КПСнг(А)-FRLS	1*2*0,75	25
27	ПТ2.1	АК3	МПП2.1	КПСнг(А)-FRLS	1*2*0,75	50
28	ПТ2.2	АК3	МПП2.2	КПСнг(А)-FRLS	1*2*0,75	55
29	ПТ2.3	АК3	МПП2.3	КПСнг(А)-FRLS	1*2*0,75	45
30	ПТ2.4	АК3	МПП2.4	КПСнг(А)-FRLS	1*2*0,75	50
31	ПТ3.1	АК4	МПП3.1	КПСнг(А)-FRLS	1*2*0,75	35
32	ПТ3.2	АК4	МПП3.2	КПСнг(А)-FRLS	1*2*0,75	40
33	ШС11	А1	BTK16	КПСнг(А)-FRLS	1*2*0,5	30
34	БП11	А1	BGB14	КПСнг(А)-FRLS	1*2*0,5	30
35	РП11	А1	UDP1	КПСнг(А)-FRLS	1*2*0,5	25
36	СО11	А1	BIAL11.2	КПСнг(А)-FRLS	1*2*0,5	20
37	СО12	А1	BIAL12.2	КПСнг(А)-FRLS	1*2*0,5	25
38	СО13	А1	BIAL13.2	КПСнг(А)-FRLS	1*2*0,5	25
39	ЗО11	А1	BIAS11	КПСнг(А)-FRLS	1*2*0,75	20
40	ШС21	А2	BTK28	КПСнг(А)-FRLS	1*2*0,5	60
41	БП21	А2	BGB23	КПСнг(А)-FRLS	1*2*0,5	70
42	РП21	А2	UDP2	КПСнг(А)-FRLS	1*2*0,5	25
43	СО21	А2	BIAL21	КПСнг(А)-FRLS	1*2*0,5	50
44	СО22	А2	BIAL22	КПСнг(А)-FRLS	1*2*0,5	60
45	СО23	А2	BIAL23	КПСнг(А)-FRLS	1*2*0,5	60
46	ЗО21	А2	BIAS21	КПСнг(А)-FRLS	1*2*0,75	50
47	ШС31	А3	BTH34	КПСнг(А)-FRLS	1*2*0,5	50
48	БП31	А3	BGB32	КПСнг(А)-FRLS	1*2*0,5	55
49	РП31	А3	UDP3.2	КПСнг(А)-FRLS	1*2*0,5	70
50	СО31	А3	BIAL31	КПСнг(А)-FRLS	1*2*0,5	50
51	СО32	А3	BIAL32	КПСнг(А)-FRLS	1*2*0,5	50
52	СО33	А3	BIAL33	КПСнг(А)-FRLS	1*2*0,5	50
53	ЗО31	А3	BIAS31	КПСнг(А)-FRLS	1*2*0,75	50
54	ПСн-1	QF11	QF5	ВВГнг(А)-FRLS	3*1,5	20
55	ПСн-2	QF13	QF7	ВВГнг(А)-FRLS	3*1,5	10
56	АОн-1	QF12	АО3	ВВГнг(А)-FRLS	3*1,5	40
57	АОн-2	QF14	АО5	ВВГнг(А)-FRLS	3*1,5	20
58	АО	АК6	АО6	КПСнг(А)-FRLS	1*2*0,5	50
59	Упр	АК6	SC	КПСнг(А)-FRLS	1*2*0,5	5
60	СКД1	ЩПА1	SR1	КСПВ	4*0,5	30
61	СКД2	ЩПА1	SR2	КСПВ	4*0,5	15
62	СКД3	ЩПА1	SR3	КСПВ	4*0,5	55

Взам. инв. N

Дата и подпись

Инв. N подл.

Изм.	Кол.у	Лист	N док	Подпись	Дата
Инженер		Мамеев			

21-34-ОПС.СОУЭ.АПТ

Автоматическая установка охранно-пожарной сигнализации. Система оповещения и управления эвакуацией. Автоматическое пожаротушение

Стадия	Лист	Листов
ПД	26	

Кабельный журнал

Формат А3

№ п/п	Наименование и техническая характеристика	Тип, марка оборудования, обозначение документа, опросного листа	Код оборудования, материала	Завод изготовитель	Единица измерения	Коли-чество	Масса единицы кг	Прим.
1	Пульт контроля и управления охранно-пожарный	С2000М		НВП «БОЛИД», г. Королев	шт.	1		
2	Контроллер двухпроводной линии связи	С2000-КДЛ		НВП «БОЛИД», г. Королев	шт.	4		
3	Блок индикации с клавиатурой	С2000-БКИ		НВП «БОЛИД», г. Королев	шт.	6		
4	Блок сигнально-пусковой	С2000-СП1, исп.1		НВП «БОЛИД», г. Королев	шт.	1		
5	Контрольно-пусковой блок	С2000-КПБ		НВП «БОЛИД», г. Королев	шт.	6		
6	Блок индикации системы пожаротушения	С2000-ПТ		НВП «БОЛИД», г. Королев	шт.	2		
7	Радио повторитель интерфейсов	С2000-РПИ		НВП «БОЛИД», г. Королев	шт.	2		
8	Источник вторичного электропитания резервированный	РИП-24 исп.51 (РИП-24-2/7П1-Р-RS)		НВП «БОЛИД», г. Королев	шт.	2		
9	Источник вторичного электропитания резервированный	РИП-24 исп.56 (РИП-24-4/40М3-Р-RS)		НВП «БОЛИД», г. Королев	шт.	2		
10	Блок приемно-контрольный и управления автоматическими средствами пожаротушения	С2000-АСПТ		НВП «БОЛИД», г. Королев	шт.	3		
11	Устройство коммутационное	УК-ВК исп.14		НВП «БОЛИД», г. Королев	шт.	1		
12	Клавиатура	С2000-К		НВП «БОЛИД», г. Королев	шт.	1		
13	Считыватель брелоков	Считыватель-2		НВП «БОЛИД», г. Королев	шт.	3		

Взам. инв. №

Подп. и дата

Изм.	Кол.	Лист	№док.	Подп.	Дата	**21-34-ОПС.СОУЭ.АПТ.С**		
Инженер		Мамеев				Автоматическая установка охранно-пожарной сигнализации. Система оповещения и эвакуации. Автоматическое пожаротушение	Стадия	Лист	Листов
							ПД	1	5
						Спецификация оборудования,			

№ п/п	Наименование и техническая характеристика	Тип, марка оборудования, обозначение документа, опросного листа	Код оборудования, материала	Завод изготовитель	Единица измерения	Коли-чество	Масса единицы кг	Прим.
14	Электронный ключ Touch Memory с держателем	DS-1-F5		IEK	шт.	20		
15	Извещатель пожарный дымовой оптико-электронный адресно-аналоговый	ДИП-34А-03		НВП «БОЛИД», г. Королев	шт.	52		в том числе 5шт.резерв
16	Извещатель пожарный ручной адресный	ИПР 513-3АМ		НВП «БОЛИД», г. Королев	шт.	10		в том числе 1шт.резерв
17	Извещатель пожарный тепловой максимально-дифференциальный адресно-аналоговый	С2000-ИП-03		НВП «БОЛИД», г. Королев	шт.	2		в том числе 1шт.резерв
18	Блок разветвительно-изолирующий БРИЗ	БРИЗ		НВП «БОЛИД», г. Королев	шт.	16		
19	Устройство контроля шлейфов сигнализации	Маяк-ШС исп. 1		Электротехника и Автоматика	шт.	2		
20	Коробка монтажная огнестойкая	КМ-О (4к)		Гефест	шт.	84		
21	Коробка ответвительная	ТУСО 100х100х50		IEK	шт.	21		
22	Извещатель охранный магнитоконтактный адресный "С2000-СМК"	"С2000-СМК"		НВП «БОЛИД», г. Королев	шт.	31		
23	Извещатель охранный объемный оптико-электронный адресный	С2000-ИК ИСП.02		НВП «БОЛИД», г. Королев	шт.	23		
24	Адресный расширитель	С2000-АР2 исп.02		НВП «БОЛИД», г. Королев	шт.	3		
25	Устройство дистанционного пуска электроконтактное	УДП 513-3М		НВП «БОЛИД», г. Королев	шт.	4		
26	Модуль порошкового пожаротушения	МПП (Н)-6-И-ГЭ-У2 ("Тунгус")		Источник плюс	шт.	12		в том числе 4шт.резерв
27	Оповещатель охранно-пожарный световой (табло)	Молния-24 "Порошок уходи		ИП Раченков А.В.	шт.	4		
28	Оповещатель охранно-пожарный световой (табло)	Молния-24 "Порошок не входи"		ИП Раченков А.В.	шт.	4		
29	Оповещатель охранно-пожарный световой (табло)	Молния-24 "Автоматика отключена"		ИП Раченков А.В.	шт.	4		

№ п/п	Наименование и техническая характеристика	Тип, марка оборудования, обозначение документа, опросного листа	Код оборудования, материала	Завод изготовитель	Единица измерения	Коли-чество	Масса единицы кг	Прим.
30	Оповещатель охранно-пожарный световой (табло)	Молния-24 "Выход"		ИП Раченков А.В.	шт.	14		
31	Оповещатель охранно-пожарный комбинированный свето-звуковой	Маяк-24-К		Электротехника и Автоматика	шт.	3		
32	Светильник аварийного освещения	SKAT LT-2330 LED		Бастион	шт.	5		
33	Оповещатель охранно-пожарный световой (табло)	Молния-24		ИП Раченков А.В.	шт.	1		
34	Оповещатель охранно-пожарный звуковой	Маяк-24-3М		Электротехника и Автоматика	шт.	25		
35	Аккумулятор герметичный свинцово-кислотный	Аккумулятор 12 В, 7 А/ч		Delta	шт.	4		
36	Аккумулятор герметичный свинцово-кислотный	Аккумулятор 12 В, 40 А/ч		Delta	шт.	4		
37	Кабель для систем ОПС и СОУЭ огнестойкий, не поддерживающий горения	КПСнг (А)-FRLS 1*2*0,5		ЭНТЭ	м	1190		
38	Кабель для систем ОПС и СОУЭ огнестойкий, не поддерживающий горения	КПСнг (А)-FRLS 2*2*0,5		ЭНТЭ	м	120		
39	Кабель для систем ОПС и СОУЭ огнестойкий, не поддерживающий горения	КПСнг (А)-FRLS 1*2*0,75		ЭНТЭ	м	885		
40	Кабель силовой огнестойкий	ВВГнг(А)-FRLS 3х1,5		Сегмент Энерго	м	90		
41	Кабель для монтажа систем сигнализации	КСПВ 2*0,5		Паритет	м	250		
42	Кабель для монтажа систем сигнализации	КСПВ 4*0,5		Паритет	м	100		
43	Коробка коммутационная	КС-4		Комплектстройсервис	шт.	31		
44	Извещатель пожарный дымовой оптико-электронный	ИП 212-189		Элемент	шт	5		в том числе 1шт.резерв
45	Извещатель охранный точечный магнитоконтактный	ИО 102-20/Б2П		Комплектстройсервис	шт	9		

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46	Извещатель пожарный тепловой максимальный	ИП 103-5/1-А3		Комплектстройсервис	шт.	15		в том числе 1шт.резерв
47	Автоматический выключатель	ВА47-29 2С 2А		IEK	шт.	5		
48	Автоматический выключатель	ВА47-29 2С 5А		IEK	шт.	2		
49	Автоматический выключатель	ВА47-29 1С 16А		IEK	шт.	4		
50	Щиток модульный с прозрачной дверцей, настенный	Бокс КМПн 2/2 (МКР42-N-02-30-20)		IEK	шт.	7		
51	Труба ПВХ жесткая гладкая	Ду20мм		IEK	м.	18		
52	Труба ПВХ жесткая гладкая	Ду40мм		IEK	м	8		
53	Кабель-канал	25*16		IEK	м	120		
54	Кабель-канал	40*16		IEK	м	160		
55	Кабель-канал	10*10		IEK	м	80		
56	Скоба металлическая однолапковая	D=19-20		IEK	шт.	800		
57	Скоба металлическая однолапковая	D=10-11		IEK	шт.	600		
58	Дюбель металлический для газобетона (MUD)	5х30		Метиз	шт.	2000		
59	Саморез по дереву	3,5*35		Метиз	шт	2000		
60	Дюбель 6*40	6*40		Метиз	шт	1000		
61	Саморез по металлу	3,8*42		Метиз	шт	1000		
62	Кабель-канал перфорированный 40х40	40х40		IEK	м	10		
63	Саморез по металлу со сверлом с пресс шайбой	СММ 4,2*25		Метиз	шт.	100		

№ п/п	Наименование и техническая характеристика	Тип, марка оборудования, обозначение документа, опросного листа	Код оборудования, материала	Завод изготовитель	Единица измерения	Коли-чество	Масса единицы кг	Прим.
64	Труба гофрированная ПВХ d=20мм с зондом	d=20мм с зондом		IEK	м	400		
65	Держатель с защёлкой для гофрированной трубы d=20мм	CF20		IEK	шт	400		
66	Трос стальной	1 мм		IEK	м	400		
67	Стяжка стальная	4.6*150		IEK	шт	1200		
68	Стяжка нейлоновая	2.5*100		IEK	шт	1200		
69	Щиток ОПС V	1000*500*15		IEK	шт	8		
70	Щиток ОПС IV	700*410*15		IEK	шт	1		
71	Шкаф металлический с монтажной панелью	ЩМП-4 (800*650*250)		IEK	шт	1		
72	Коробка монтажная ответвительная	TYCO 260*175*90		IEK	шт.	2		
73	Антенна внешняя ненаправленная	диапазон 2,4 ГГц с разъёмом RP-SMA (male)		D-Link	шт.	2		
74	Модуль подключения нагрузки	МПН		НВП «БОЛИД», г. Королев	шт.	66		
75	Резистор	МЛТ-0.5-4.7 кОм			шт.	16		
76	Резистор	МЛТ-0,5- 2.2 кОм			шт.	4		
77	Резистор	МЛТ-0,5- 8.2 кОм			шт.	9		
78	Резистор	МЛТ-2- 120 Ом			шт.	8		

Attachment 2 – Special Instructions for Contracts - IMS stations operated by the SMS of MoD RF

1. The Contractor shall apply to the SMS authorities for obtaining/confirming site access permit for their specific personnel to enter the facility to perform the work at least 2 weeks before the scheduled visit. Passport copies of personnel designated to perform the work shall be attached to the request for the site access permit. The passport shall meet the following requirements:

    - Passport page with the photo and information about the issuing authority;
    - Page with address information.

2. In addition to the set of documents required for site access permit to perform the work, a Contractor shall also submit:

    - An approved design of the work to be performed;
    - A certified copy of self-regulatory company certificate confirming the Contractor's specialization (in case of work associated with design of facilities and systems, construction/repair, survey and other activities affecting safety);
    - A certified copy of the professional license (as required, in accordance with Federal Laws of the Russian Federation).

3. Upon review of the submitted documents, the SMS will approve/reject access of the Contractor's personnel to the facility to perform the work.

4. In the course of work execution, the Contractor shall follow the rules and requirements of the "stay" on site and shall maintain all required safety standards. In the event of violation of the rules of "stay" at the facility, violation of labor safety or other misconduct, depending on the extent of violation or misconduct, SMS reserves the right to cancel the access for either an individual Contractor Personnel or the Contractor as a whole. In the event such incidents occur, the SMS will promptly notify the Commission and provide clarifications accordingly.

5. **Temporary Interruption of the Work:** In the event that special internal activities are conducted by the SMS, the SMS reserves the right to suspend access to the Contractor's personnel to SMS's facilities (if these activities are of reciprocal influence) but not for a period longer than 5 work-days in each case. The SMS will notify the Commission and the Contractor about such activities.

6. **Tax** - In accordance with the provisions of the Facility Agreement (CTBT/LEG.AGR/33); Federal Law No. 95 FZ "About grants (technical assistance)…" dated 4 May 1999; and Order of the Ministry of Foreign Affairs of the Russian Federation and Ministry of Finance of the Russian Federation; March 24, 2014 No. 3913/19n, Work under this Contract shall be exempt from tax and relevant duties levied in the Russian Federation.

7. **Tax Exemption Certificate:** In the event a Tax Exemption Certificate is required by the Contractor, the Contractor shall communicate in writing with the Commission and SMS to agree on the required procedures to be undertaken.

ANNEX B

TERMS OF REFERENCE

LOT 2

UPGRADE OF THE FIRE ALARM AND SAFEGUARDING SYSTEM AT IMS STATIONS PS36/IS44/RN60, PETROPAVLOVSK-KAMCHATSKIY, THE RUSSIAN FEDERATION

TABLE OF CONTENTS

1. INTRODUCTION

The Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization (the Commission) intends to engage a contractor to perform the works pertaining to the upgrade of fire alarm and safeguarding systems at the IMS stations PS36/IS44/RN60, Petropavlovsk-Kamchatskiy (the Stations) located at:

- PS36/IS44: Nachiki, Elizovskiy Region, Kamchatskiy Krai;
- RN60: Petropavlovsk-Kamchatskiy, Schorsa Street, Kamchatskiy Krai

1.1 SMS

The Contractor shall be required to coordinate the Work with the SMS. The Special Monitoring Service (SMS) of the Ministry of Defence (MoD) has been designated by the Government of the Russian Federation as the sole national technical counterpart for coordinating activities related to liaison, establishment and upgrade of infrastructure, installation, testing and evaluation, certification and post-certification activities for all IMS primary and number of auxiliary seismic stations in the Russian Federation.

The Commission and the SMS of MoD RF have agreed that in this project the role and responsibilities of the SMS shall be to coordinate activities between the Commission and the Contractor for this Work, verify all documents related to the project, monitor, review and accept the reports and works for the upgrade of the fire alarm and safeguarding systems of the Stations, as well as to confirm that the works have been performed in conformance with the national and local rules and regulations.

2. SCOPE OF WORK

The Contractor shall ensure that the Work shall be performed with a high quality, in timely manner and at a reasonable cost in accordance with these Terms of Reference.

The Scope of Work includes:

2.1. Preparatory activities
2.2. Review and finalization of the design documentation by the Contractor;
2.3. Supply of equipment, materials and other supplies;
2.4. Dismantling and disposal of the existing fire alarm and safeguarding systems;
2.5. Installation and commissioning works;
2.6. Development of executive documentation and operational documentation for the submission to the SMS and Station personnel;
2.7. Cleaning and removal of debris and materials upon completion of the Work.

Work Task 1 – Preparatory activities

The Contractor shall perform all preparatory activities for successful implementation of the Work Tasks described below. The preparatory activities shall include:

(a) Submission of the work schedule and its agreement with the SMS and the Commission;
(b) Submission of documents for arrangement of the Contractor's personnel and transport to access the Stations (please refer to Attachment 3 to the Terms of Reference).

Work Task 2 – Review and finalization of the design documentation by the Contractor

This Work Task includes review of the pre-developed designs for conformity to the requirements of RF laws in the field of fire security and safeguarding systems (please refer to Attachments 1 and 2 to the Terms of Reference). As required, the Contractor shall finalize this documentation in coordination and agreement with the SMS and the Commission. Upon the Commission's acceptance of the design and prior to commencement

of dismantling and installation work, the Contractor shall submit one (1) copy of the technical design documentation to the SMS to arrange supervision and acceptance activities of the Work.

Work Task 3 – Supply of equipment, materials and other supplies

The Contractor shall purchase and deliver equipment, materials and supplies required for the Work and specified in the approved design.

Work Task 4 – Dismantle and disposal of the existing fire alarm and safeguarding systems

The Contractor shall perform the following activities:

(a) Dismantle the equipment of the existing fire alarm and safeguarding systems in all three (3) stations;
(b) Handover of the dismantled equipment to the SMS representatives to arrange for its discarding;
(c) After the SMS' approval, arrange a disposal of the discarded equipment.

Work Task 5 – Installation of fire alarm and safeguarding systems and commissioning

The Contractor shall perform the following activities:

(a) Install new fire alarm and safeguarding systems in accordance with the design documentation and relevant requirements;
(b) Commission all systems and perform all required testing of the installed system to check its operation together with the SMS representatives.

Work Task 6 – Development of executive and operational documentation and its submission

The Contractor shall prepare executive and operational documentation in accordance with relevant requirements of the RF laws and submit to the SMS prior to the commencement of acceptance testing. The list of executive documentation is provided in Attachments 1 – 2 to the Terms of Reference.

Work Task 7 – Cleaning and removal of debris and materials upon completion of the work

After completion of the installation work, the Contractor shall clean the working area and remove the debris for its further disposal. At the time of work acceptance by the SMS, the territory shall be cleared of debris and construction materials.

3. OTHER REQUIREMENTS

3.1 General requirements

The Contractor shall:

(a) Have a license for relevant types of work (if a sub-contracting organization is engaged, it shall have such license available);
(b) Obtain all required permits for access to the Station with the sole purpose of performing the Work (please refer to Attachment 3 to the Terms of Reference).

3.2 Quality and life expectancy

The Contractor shall deliver high-quality materials and workmanship. In selection of materials, the Contractor shall consider the environmental extremes typical to the region where the Station is located.

Life expectancy of elements of the fire alarm and safeguarding systems specified in the design and installed by the Contractor shall be defined as a period of time during which it is expected to meet the requirements before a replacement is needed.

3.3 Time Schedule

The Contractor shall supply, install, commission and test the systems within five (5) months after the approval of the finalized design documentation.

4. INSPECTION

The Commission may send its representative(s) to the Station for inspection during any stage of the Work. The purpose of the inspection will be the inspection of the purchased materials and quality of the Work and their compliance with the local norms and the Terms of Reference. If the inspection reveals that any part of the Work is not in compliance with the Terms of Reference, the Commission shall instruct the Contractor to take the necessary action to remedy the defects. The period to remedy the defects shall be 2 (two) weeks after the written report is provided by the inspection.

5. REPORTING

5.1 Design Documentation and Purchase Report

The Contractor shall prepare and submit the Design Documentation Report and the Equipment Purchase Report to the SMS and the Commission not later than two (2) months after the Contract is signed, providing all recommendations, designs, specifications, drawings and time schedule plan, as described in Work Tasks 1 – 3 of Section 2 of the Terms of Reference.

The finalized design documentation, drawings (if any) and time schedule plan shall be approved by the SMS and the Commission before the commencement of dismantling and installation work at the Stations. The Commission shall review and respond to the Design Documentation Report within 2 weeks after its receipt.

If agreed, the Contractor shall prepare and submit to the Commission the Purchase Report within two (2) weeks after the purchase of all equipment, materials and supplies for the installation work. This part of the Report shall contain the list and description of the purchased equipment, materials and supplies and a proof of the purchase.

If the Commission, after review of the Design Documentation and Purchase Report requires further information and/or remedial action is necessary, the Commission will instruct the Contractor to provide such additional information. The Contractor shall submit such additional information in the form of the Revised Design Report and Purchase Report within 2 (two) weeks of the Commission's instruction.

5.2 Final Report/Revised Final Report

The Contractor shall prepare and submit the Final Report to the Commission and SMS within 5 (five) working days after completion of Work Tasks 4 – 7 referred to in Section 2 of the Terms of Reference. The Report shall include full description of the completed work on site and accompanied by photos for each stage of the work. The Report shall also include documentation described in Work Task 6 of Section 2 above.

If the Commission after review of the Final Report, requests additional information or requests to remedy any part of the Work, the Commission shall instruct the Contractor to provide such information or to take the necessary actions to remedy the defects. The period to remedy the defects shall be two (2) weeks after the Commission's and/or SMS' instructions.

In this case, the Contractor shall re-submit the Report in the form of Revised Final Report to the Commission and SMS within 5 (five) working days after completion of all tasks of the Work. The Report shall include full description of the additional information and/or remedy actions taken. Acceptance of the Final Report/Revised Final Report by the Commission shall be considered the full acceptance of the Work.

6. SUPPLIER'S PERFORMANCE REVIEW

The Contractor's performance under the Contract shall be subject to the Contractor's performance review by the Commission. Generally, this review includes the adherence of the Contractor to the time schedule agreed between both Parties, completeness of the documentation and quality of the Contractor's workmanship and Work. The Commission will review the Contractor's performance after the acceptance of the Final Report/Revised Final Report by the Commission. The Commission may invite the Contractor to discuss the results of such review.

ATTACHMENT 1 TO TERMS OF REFERENCE

Certificate No. 10973 dated May 25, 2015

Copy 1

Copies 2

Comprehensive Nuclear-Tests-Ban Treaty Organization

Radionuclide IMS station RN60

DESIGN and WORKING DOCUMENTATION

Section 9 "Measures to ensure fire safety"
Part 1 "Fire alarm system. Security alarm system"

310/2021-FS1

Volume 1

Изм.	№ док.	Подпись	Дата

2021

ООО "Sigma-K" (Limited Liability Company)

Certificate No. 10973 dated May 25, 2015

Comprehensive Nuclear-Tests-Ban Treaty Organization

Radionuclide IMS station RN60

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2021

Volume content

Designation	Name	Note
310/2021-FS1.VC	Volume content	2
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	Fire alarm system	
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	materials	
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	Consolidated estimate of the cost	27
	of construction	

Согласовано

Взам. подл. №

Подпись и дата

Инв. № подл.

Chang	Party	Sheet	№ doc.	Signature	Date
Developed		Sinelnikov			03.21
CPE		Sinelnikov			03.21
Reg.control		Ivanov			03.21

310/2021-FS1.VC

Volume content

Stage	Sheet	Sheets
D		1

A4 format

Composition of design and working documentation

Volume number	Designation	Name	Note
1	310/2021-FS1	Section 9 "Measures to ensure fire safety"	
		Part 1 "Fire alarm system. Security alarm system"	

Согласовано

Взам. подл. №

Подпись и дата

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Chang	Party	Sheet	№ doc.	Signature	Date
Developed		Sinelnikov			03.21
CPE		Sinelnikov			03.21
Reg.control		Ivanov			03.21

310/2021-FS1.CD

Composition of design and working documentation

Stage	Sheet	Sheets
D		1

Content

Design documentation was developed in accordance with the urban planning plan land plot, design assignment, town planning regulations, technical regulations, including those establishing requirements for ensuring the safe operation of buildings, structures, structures and the safe use of adjacent territories, and in compliance with technical conditions.

Согласовано

Взам. подл. №

Подпись и дата

Инв. № подл.

Chang	Party	Sheet	№ doc.	Signature	Date
Director		Shevchenko			03.21
Developed		Sinelnikov			03.21
CPE		Sinelnikov			03.21
Reg.control		Ivanov			03.21

310/2021-FS1.EN

Explanatory note

Stage	Sheet	Sheets
D	1	8

A4 format

1. General data

This section of the design documentation was developed on the basis of term of reference "DEVELOPMENT OF DESIGN DOCUMENTATION FOR FIRE ALARM AND SAFEGUARDING SYSTEM AT IMS STATION RN60, PETROPAVLOVSK-KAMCHATSKYI, RUSSIAN FEDERATION" and provides for the creation of fire alarm system (hereinafter referred to as FAS) and security alarm system (hereinafter referred to as SAS) in the building of the radionuclide station IMS RN60 (hereinafter referred to as the Object), located at the address: 683032, Kamchatskiy Krai, Petropavlovsk-Kamchatskiy, Shchorsa Str. 31.

2. Brief description of the Object

The Object is located in a 1-storey building. The object occupies 5 adjacent rooms with access to a common corridor.

The walls and partitions of the building are made of cinder-concrete stones, the floor is made of reinforced concrete slabs, the interior decoration is plaster, sheathing with gypsum board, painting, an Armstrong type suspended ceiling.

The Object building belongs to the III category in terms of power supply reliability and is provided with an autonomous backup power supply from a diesel generator. Forced supply and exhaust ventilation. The fire resistance of the building is II. Functional fire hazard class of the facility - Ф5.1. The total protected area of the Facility is 57.9 m2.

The Object is equipped with a security and fire alarm system (hereinafter referred to as SFAS). The existing SFAS equipment is subject to dismantling - see table 1.

List of equipment to be dismantled

Table 1

№	Name of equipment and materials	Unit	Quantity
1	Fire alarm control panel ВЭРС-ПК-8	pcs.	1
2	Redundant power supply БИРП-12	pcs.	1
3	Smoke fire detector ИПД3.1	pcs.	10
4	Manual fire detector ИПР	pcs.	1
5	Powder extinguishing module Буран-2,5	pcs.	1
6	Light and sound annunciator Маяк-12	pcs.	3
7	Security magnetic contact detector ИО102-2	pcs.	16
8	Sound security detector Стекло	pcs.	6

3. Applied equipment

The construction of the FAS and SAS is carried out on the basis of the equipment of the facility system of the wireless security and fire alarm system Астра-Zитадель and Астра-РИ-М, manufacturer TEKO.

3.1. The FAS includes the following equipment:

3.1.1. Control and reception devices:

- fire and security control panel Астра -8945 Pro with communication module Астра -GSM (ПАК Астра) and interface module Астра-RS-485;
- control panel Астра-814 Pro;
- display unit Астра-863 исп. А.

3.1.2. Radio expanders:

- radio expander Астра-РИ-М РР.

3.1.3. Isolators, actuators:

- communication line insulator Астра-А ИЛС;
- modular contactor ELKO EP VS425-04.

3.1.4. Fire detectors and annunciators:

- optical-electronic radio channel fire alarm smoke detector Астра-421 исп. РК;
- manual radio channel fire detector Астра-4511;
- combined radio channel fire alarm Астра-2331.

3.1.5. Power Sources:

- redundant power supply РИП-24 исп. 06.

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3.2. The SAS includes the following equipment:

3.2.1. Control and reception devices:

- fire and security control panel Астра-812 Pro with Астра -GSM communication module (ПАК Астра);
- display unit Астра-863 исп. Б with Touch Memory reader;
- radio channel control panel Астра-8131.

3.2.2. Radio expanders:

- radio expander Астра-РИ-М РР.

3.2.3. Security detectors and annunciators:

- security detector volumetric optoelectronic passive radio channel Астра-5131 исп. А;
- security surface sound radio channel detector Астра-6131;
- radio channel magnetic contact point security detector Астра-3321;
- radio channel electrical point security alarm Астра-3221;
- combined radio channel security siren Астра-2331.

3.2.4. Power Sources:

- redundant power supply РИП-12 исп. 18.

4. Purpose and location of equipment

4.1. Technical means FAS are designed to detect a fire at an early stage and provide:

- control of the state of fire detectors and annunciators;
- control of the serviceability of communication lines with the detection of breakage and short circuit and control of the serviceability of technical means and the formation of the Malfunction signal;
- generation of Attention and Fire signals when smoke detectors are triggered;
- formation of a Fire signal when a manual fire detector is triggered;
- activation of light and sound annunciators when a Fire signal is generated;
- shutdown of the supply and exhaust ventilation and air conditioning system when the Fire signal is generated;
- control of fire alarm zones with display of their status on the Астра-863 исп. А;
- control of technical means of the FAS by means of the Астра-814 Pro remote control;
- registration and storage of information about all events in the non-volatile memory of the Астра-8945 Pro device;
- restricting access to control and programming functions;
- automatic transmission of voice messages and notifications in SMS format when the Malfunction, Attention and Fire signals are generated to the phone of the responsible person of the owner.

The Астра-8945 Pro device is designed to monitor the status and control of the technical means of the SPS connected to the RS485 ring interface using the Астра-RS-485 interface module, transmit voice messages and notifications in the SMS format when the Fault, Attention and Fire signals are generated to the phone of the responsible person of the owner through the communication module Астра-GSM (ПАК Астра). The Астра-814 Pro console, the Астра-863 исп. А and radio expanders Астра-РИ-М РР are connected to the RS485 ring interface.

The Астра-814 Pro remote control is designed to monitor the status and control of technical means that are connected to the Astra-8945 Pro device.

Block Астра-863 исп. А is intended for light and sound indication of the state of the FAS sections.

The Астра-РИ-М РР radio expander is designed to monitor the state of fire detectors and sirens by means of a radio channel in the 433.42 / 434.42 MHz operating frequency range and to transmit information to the Астра-8945 Pro device. Operating mode of the wireless expander System.

The Астра-А ИЛС communication line isolator is designed to maintain the functionality of the RS485 ring interface in the event of a short circuit or a break in the communication line.

The VS425-04 contactor is designed to turn off the supply and exhaust ventilation system by opening the power supply line of the ventilation system.

Smoke fire detector Астра-421 исп. РК is designed to detect a fire accompanied by the appearance of smoke and transmit Fault, Norm, Attention and Fire notifications to the Астра-РИ-М РР radio expander via a radio channel.

The Астра-4511 manual fire detector is designed to generate a Fire signal when the actuator of the detector is pressed and send Fault, Norm and Fire notifications to the Астра-РИ-М РР radio expander via the radio channel.

The combined fire alarm Астра-2331 is intended for light and sound warning of a fire on command from the Астра-РИ-М PP radio expander via the radio channel and transmitting Fault and Norm messages to the Астра-РИ-М PP radio expander via the radio channel.

Power supply РИП-24 исп. 06 is intended for power supply of technical means of FAS with a voltage of 24V. Transmission is provided. Power supply failure РИП-24 исп. 06 for the Астра-8945 Pro device.

The design documentation provides for the shutdown of the supply and exhaust ventilation and air conditioning system when the Fire signal is generated by supplying 24V power to the VS425-04 contactor from the Астра-8945 Pro device and closing the forced shutdown contacts on the СРК-ДМ air conditioner operation coordinator with the output of the Астра-8945 Pro device.

The design documentation provides for a fire warning and evacuation system (hereinafter referred to as FWES) of the 2nd type. For the organization of FWES, a combined fire annunciator Астра-2331 is used.

Algorithm of the FWES operation: Astra-2331 sirens in the Norm mode are disabled, when a Fire signal is generated, they are enabled.

FAS work algorithm:

- the Norm mode, the state in which all the technical means of the FAS are in the Norm mode, the light indication of the Norm is switched on on the technical means of the FAS;
- Fault mode, the state in which at least one technical means of the FAS is in the Fault mode while the Астра-814 Pro console and the Астра-863 исп. А the light and sound alarm is turned on, on the other technical means of the FAS, the light indication Fault is turned on, the Fault message is sent to the phone of the responsible person of the owner;
- Attention mode, the state in which the smoke threshold is exceeded Attention of the fire smoke detector Астра-421 исп. РК, while on the Астра-814 Pro console and the block Астра-863 исп. А, light and sound alarms are turnec on, the Attention message is sent to the phone of the responsible person of the owner;
- Fire mode, the state in which the smoke threshold is exceeded Fire of the fire smoke detector Астра-421 исп. РК or the actuator of the manual fire detector Астра-4511 is pressed, while on the Астра-814 Pro console and the Астра-863 исп. А the light and sound alarm is turned on, the ventilation and air conditioning system is turned off, the FWES is turned on and the Fire message is sent to the phone of the responsible person of the owner.

Install the Астра-8945 Pro device and the Астра-814 Pro remote control in the equipment room, install the Астра-РИ-М PP radio expanders in the laboratory, install the Астра-863 исп. А in the duty shift room, the power supply РИП-24 исп. 06 install the spare parts in the storeroom. Install fire detectors and sirens in accordance with equipment layout plans.

4.2. SAS technical means are designed to detect attempts to enter an object and provide:

- monitoring the status of security detectors and sirens;
- control of the serviceability of communication lines with the detection of breakage and short circuit and control of the serviceability of technical means and the formation of the Malfunction signal;
- formation and issuance of alarm signals in case of unauthorized entry or attempted entry into the protectec premises;
- formation and issuance of the Alarm signal when the alarm detector is triggered;
- activation of light and sound annunciators when the Alarm signal is generated;
- control of security alarm zones with display of their status on the Астра-863 исп. Б;
- control of the technical means of the SAS by means of the Астра-812 Pro device when dialing the PIN-code, the Астра-8131 remote control when dialing the PIN-code, the Астра-863 исп. Б when identifying the Touch Memory key;
- registration and storage of information about all events in the non-volatile memory of the Астра-812 Pro device;
- restricting access to control and programming functions;
- automatic transmission of voice messages and notifications in the SMS format when the Fault and Alarm signals are generated to the phone of the responsible person of the owner.

The Астра-812 Pro device is designed to monitor the status and control of the technical means of the SAS connected to the RS485 interface, monitor the status and control of security detectors and sirens, the Астра-8131 console and the Астра-РИ-М PP radio expander via a radio channel in the operating frequency range 433.42 / 434.42 MHz, the transmission of voice messages and notifications in the SMS format when the Fault and Alarm signals are generated to the telephone of the responsible person of the economic organization through the communication module Астра-GSM (ПАК Астра), Астра-863 исп. Б is connected to the RS485 interface.

Block Астра-863 исп. Б is intended for light and sound indication of the state of the SAS sections and control of arming and disarming SAS sections. Access to the management of sections is carried out by identifying the Touch Memory key with a contactless reader.

The Астра-8131 console is designed for light and sound indication of the state of the SAS sections and control of arming and disarming SAS sections. Access to the management of sections is carried out by entering the PIN-code.

The Астра-РИ-М РР radio expander is designed to receive notifications from security detectors and sirens and relay their status to the Астра-812 Pro device via a radio channel in the 433.42 / 434.42 MHz operating frequency range. Operating mode of the radio expander Repeater.

Security detector Астра-5131 исп. А is designed to detect intrusion into the protected area and transmit the Fault, Armed, Disarmed and Alarm messages to the Астра-812 Pro device via the radio channel.

The Астра-6131 security alarm detector is designed to detect glass breakage in a guarded room and transmit Fault, Armed, Disarmed and Alarm messages to the Астра-812 Pro device via the radio channel.

The Астра-3321 magnetic contact security detector is designed to block the opening of doors and windows and transmit Fault, Armed, Disarmed and Alarm to the Астра-812 Pro device via radio channel.

Combined security annunciator Астра-2331 is intended for information on the state of the SAS technical means in the following mode: Armed – the light annunciator is constantly on, Disarmed – the light annunciator is not on, Alarm – the light annunciator is on intermittently, the audible annunciator is on and notifications are transmitted Fault, On protection, Disarmed and Alarm to the Астра-812 Pro device via radio channel.

Power supply РИП-12 исп. 18 are intended for power supply of technical means of SAS with a voltage of 12V.

SAS operation algorithm:

– Armed mode, the state of the section (room, office, etc.) in which all the technical means of the SAS related to the section are in the Armed mode, the Armed light indication is turned on on the SAS technical means;

– Disarmed mode, the state of the section (room, office, etc.) in which all the SAS technical means related to the section are in the Disarmed mode, the Disarmed light indication is on on the SAS hardware;

– Fault mode, a state in which at least one technical means of the SAS is in the Fault mode while on the Астра-812 Pro device and the Астра-863 исп. Б light and sound alarms are turned on, on the other technical means of the SAS, the light indication Fault is turned on, a Fault message is sent to the phone of the responsible person of the owner;

– Alarm mode, the state in which at least one security detector is in Alarm mode, while the Астра-812 Pro device and the Астра-863 исп. Б the light and sound alarm is switched on, the Alarm message is sent to the phone of the responsible person of the owner.

Install the Астра-812 Pro device in the control room, install the Астра-РИ-М РР radio expander in the detector room, install the Астра-8131 remote control in front of the control room entrance, Астра-863 исп. Б install in the duty shift room, power source РИП-12 исп. 18 install in the storeroom of spare parts. Install security detectors and sirens in accordance with the equipment layout plans.

5. Power supply

According to the degree of ensuring the reliability of power supply, the consumers of the FAS and SAS belong to the 1st category.

The Object belongs to the III category in terms of power supply reliability and is provided with an autonomous backup power supply from a diesel generator, in connection with this project, it is envisaged to use power sources with rechargeable batteries, which, in the absence of the main voltage, ensure the operation of the FAS technical means in standby mode for 24 hours and in the alarm mode for 1 hour and the operation of the technical means of the SAS in the standby mode for 24 hours and in the alarm mode for 3 hours.

Power supply for the Астра-8945 Pro device, Астра-814 Pro remote control, Астра-863 исп. А unit, radio expanders Астра-РИ-М РР and isolators of the communication line Астра-А ИЛС is provided from the power source РИП-24 исп. 06.

Power supply for the Астра-812 Pro device, the Астра-863 исп. Б unit, the Астра-8131 remote control, the Астра-РИ-М РР radio expander and the Астра-2331 siren are provided from the РИП-12 исп. 18.

Power supply of power supplies РИП-24 исп. 06 и РИП-12 исп. 18 is provided from a single-phase electrical network with a voltage of 220V / 50Hz from separate circuit breakers of the security system shield.

Backup power supply РИП-24 исп. 06 and РИП-12 исп. 18 is provided from storage batteries (see Table 2).

Power supply and protective grounding are provided by the customer in accordance with the attached construction assignment (see sheet 310/2021-FS1.CA).

Table 2

Designation on the project	Name current consumption equipment	Quantity, pcs.	Consumption current, mA		Total current consumption, mA	
			Standby mode	Alarm	Standby mode	Alarm
UPS7	Астра-8945 Pro	1	140	140	140	140
	Астра-814 Pro	1	120	120	120	120
	Астра-РИ-М	3	80	80	240	240
	Астра-863 исп. А	1	80	150	80	150
	Астра-А ИЛС	10	5	5	50	50
	РИП-24 исп. 06	1	70	70	70	70
					700	770

Battery capacity calculation:
Standby time 24 hours – $E_{бат.д}$ = 0,70Ax24h/0,8 =21,0Axh
Operating time in alarm mode 1 hour – $E_{бат.тр}$ = 0,77Ax1h/0,8 =1,0Axh
Required battery capacity $E_{бат.}$= $E_{бат.д}$ + $E_{бат.тр}$ =21,0Axh+1,0Axh=22,0Axh
0.8 – safety factor (20% of the full discharge of the battery)
For the UPS7 power supply, we accept: redundant power supply РИП-24 исп. 06
Nominal output voltage – 24V
Output rated current – 4.0A
Storage battery 12V/26Axh – 2 pcs.

Designation on the project	Name current consumption equipment	Quantity, pcs.	Consumption current, mA		Total current consumption, mA	
			Standby mode	Alarm	Standby mode	Alarm
UPS3	Астра-812 Pro	1	120	120	120	120
	Астра-863 исп. Б	1	100	160	100	160
	Астра-РИ-М РР	1	100	100	100	100
	Астра-8131	1	20	70	20	70
	Астра-2331	1	100	200	100	200
	РИП-12 исп. 18	1	40	40	40	40
					480	690

Battery capacity calculation:
Standby time 24 hours – $E_{бат.д}$ = 0,48Ax24h/0,8 =14,4Axh
Operating time in alarm mode 3 hour – $E_{бат.тр}$ = 0,69Ax3h/0,8 =2,6Axh
Required battery capacity $E_{бат.}$= $E_{бат.д}$ + $E_{бат.тр}$ =14,4Axh+2,6Axh=17,0Axh
0.8 – safety factor (20% of the full discharge of the battery)
For the UPS3 power supply, we accept: redundant power supply РИП-12 исп. 18
Nominal output voltage – 12V
Output rated current – 3.0A
Storage battery 12V/17Axh – 1 pcs..

6. Cable lines

Cable lines FAS perform:
- interface line RS-485 – cable КИС-РВнг(А)-FRLS 2х2х0,64мм;
- power supply line 24V – cable КСРВнг(А)-FRLS 1х2х0,97мм;
- connecting lines – cable КСРВнг(А)-FRLS 4х0,5мм
- power supply line 220V – cable ВВГнг(А)-FRLS 3х1.5мм2.

Cable lines SAS perform:
- interface line RS-485 – cable КИС-РВнг(А)-FRLS 2х2х0,64мм;
- power supply line 12V – cable КСРВнг(А)-FRLS 1х2х0,97мм;
- connecting lines – cable КСВВнг(А)-LS 4х0,5мм;
- power lines 220V – cable ВВГнг(А)-LS 3х1.5мм2.

The cable lines should be laid openly on brackets behind the false ceiling, downsides to the equipment in the cable duct and in the flexible corrugated pipe.

7. Configuring

Configure the FAS using a personal computer with preinstalled software ПКМ Астра Pro версии 5.5. If necessary, update the Астра-8945 Pro device to version 5.5. For the Астра-РИ-М РР radio expander, use the software sysRR5.0. Connect a personal computer to the Астра-8945 Pro device using the Астра-984 interface unit. Perform the configuration in accordance with the instructions of the user of the software ПКМ Астра Pro, the Астра-8945 Pro device, this project documentation and in agreement with the owner.

Configure the SAS using a personal computer with preinstalled software ПКМ Астра Pro версии 5.3. If necessary, update the Астра-812 Pro device to version 5.3. Connect a personal computer to the Астра-812 Pro device using the Астра-984 interface unit. Perform the configuration in accordance with the instructions of the user of the software ПКМ Астра Pro, the Астра-812 Pro device, this project documentation and in agreement with the owner.

8. Symbols adopted in the project

Обозначение	Наименование
ARKx	Fire alarm control panel Астра-8945 Pro
ARKx	Fire alarm control panel Астра-812 Pro
RMCx	Monitoring and control panel Астра-814 Pro
DUKx	Display unit Астра-863 исп. А (Also Астра-863 исп. Б)
RSx	Radio expander Астра-РИ-М РР (System mode)
RRx	Radio expander Астра-РИ-М РР (Repeater mode)
UPSx	Redundant power supply РИП-24 исп. 06 (Also РИП-12 исп. 18)
IS	Communication line isolator Астра-А ИЛС
xBTHy	Radio cannel smoke fire detector Астра-412 исп. РК
xBTHy	Also, installation behind a false ceiling
xBTMy	Radio cannel manual fire detector Астра-4511
xBIALSy	Radio cannel combined security and fire siren Астра-2331
xSCy	Modular contactor VS425-04
СРК	Air conditioner coordinator СРК-DM
xRCy	Radio cannel control panel Астра-8131
xBGLy	Radio cannel surround security detector Астра-5131 исп. А
xBGTy	Radio cannel surface sound security detector Астра-6131
xBGBy	Radio cannel magnetic contact security detector Астра-3321
xBGMy	Radio cannel electrical contact security detector Астра-3221
RTM	Reader Touch Memory Считыватель-2
ELD	Emergency lighting lamp ДПА-2104
ЩСБ	Power security system shield
ВРУ	Input distribution device
———	Cable line

Примечания: x – number (address) of the device, radio expander, control panel, unit, power supply;
y – number (address) of the detector, annunciator, control panel, control output.

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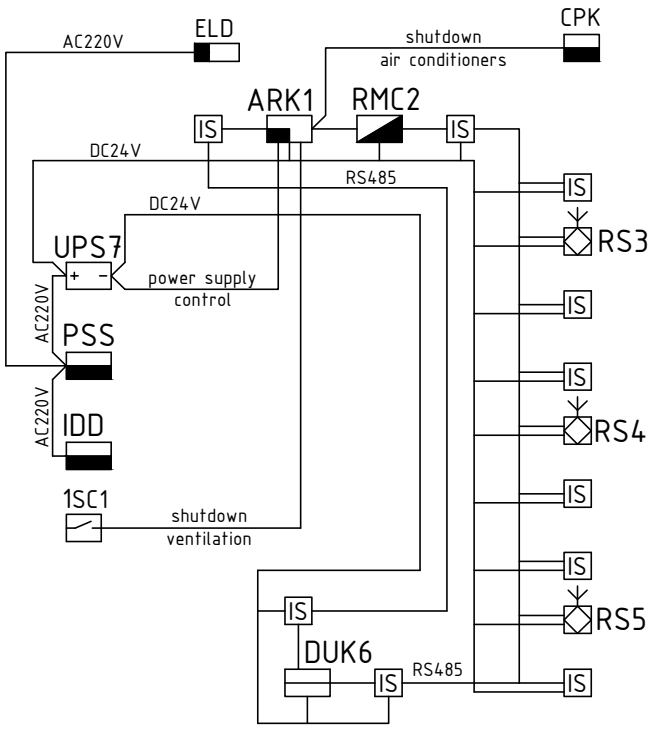
A4 format

Fire alarm system

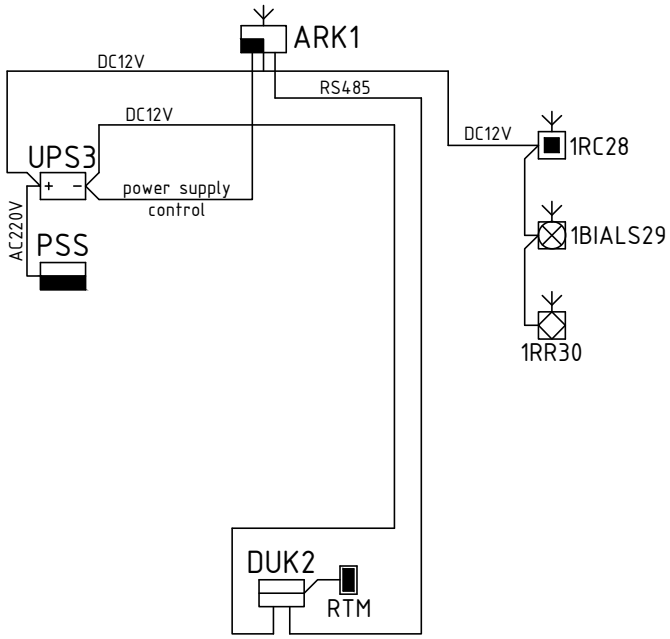


3BTH1 . . . 3BTH10 — Астра-412 – 10 pcs.

4BTM1 . . . 4BTM4 — Астра-4511 – 4 pcs.

5BIALS1 . . . 5BIALS6 — Астра-2331 – 6 pcs.

Security alarm system



1BGL1 . . . 1BGL5 — Астра-5131 исп. А – 5 pcs.

1BGT6 . . . 1BGT10 — Астра-6131 – 5 pcs.

1BGB11 . . . 1BGB26 — Астра-3321 – 16 pcs.

1BGM27 — Астра-3221 – 1 pc.

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Developed		Sinelnikov			03.21.
CPE		Sinelnikov			03.21.
Reg.control		Ivanov			03.21.

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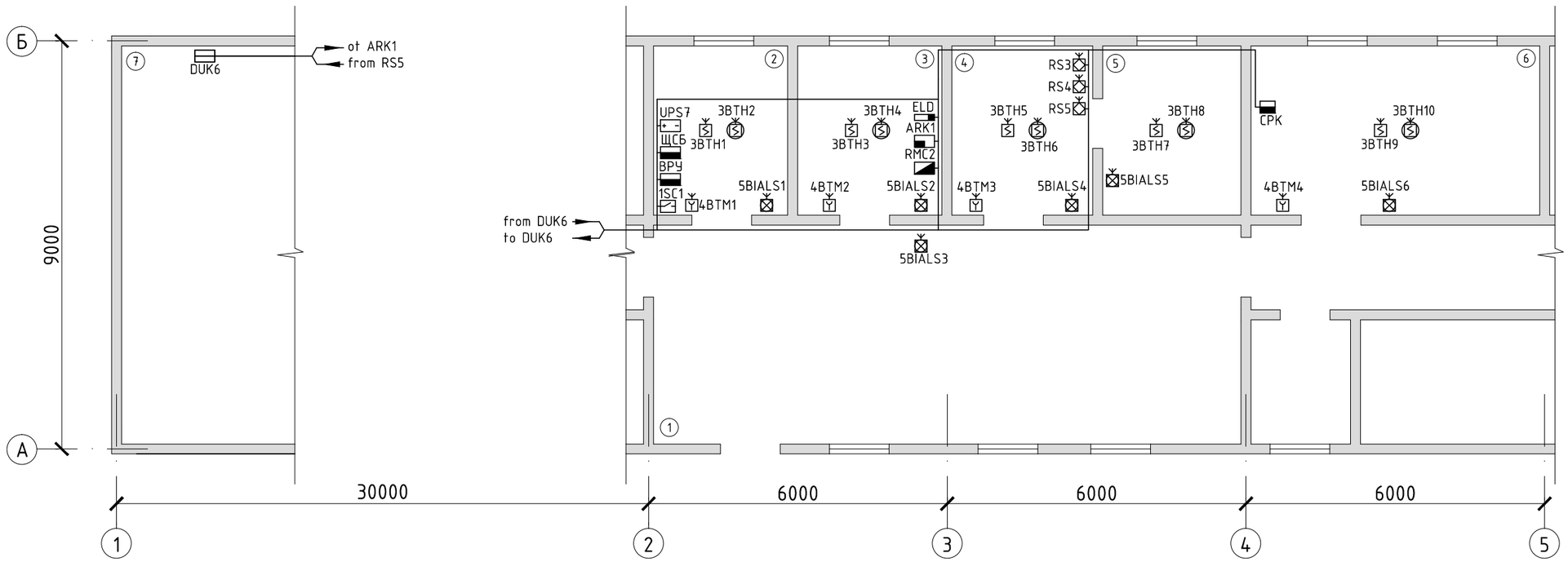
Radionuclide IMS station RN60

Fire alarm system. Security alarm system	Stage	Sheet	Sheets
	D	1	5
Structural scheme			

A4 format

Explication of premises

№	Name	Area, m2	Category premises for explosion and fire hazard
1	Hall	-	
2	Storeroom spare parts	9,2	Д
3	Equipment room	10,1	Д
4	Laboratory	9,5	Д
5	Detector	9,8	Д
6	RBG	19,3	В3
7	Duty shift room	-	



Installation instructions:

1. Астра-8945 Pro device and Астра-814 Pro control panel together with Астра-А ИЛС insulators, ARK1 and RMC2 markings, should be installed on a metal mounting panel 610x460mm thick. 1mm.
2. Display unit Астра-863 isp. And together with insulators Астра-А ИЛС, marking DUK6, install on a metal mounting panel 450x450mm thick. 1mm.
3. Communication line insulators Astra-A ILS are not shown conventionally, see sheet 1.
4. Lay the cable lines openly on the brackets behind the false ceiling, lower the cables to the equipment in the cable channel 25x16mm.
5. Passing cables through walls, partitions and ceilings should be made in a smooth PVC pipe d20mm. Seal the passages with non-combustible material.

Chang	Party	Sheet	№ doc.	Signature	Date
Developed		Sinelnikov			03.21.
CPE		Sinelnikov			03.21.
Reg.control		Ivanov			03.21.

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Radionuclide IMS station RN60

Fire alarm system	Stage	Sheet	Sheets
	D	2	

Layout of equipment and cable routes

Согласовано

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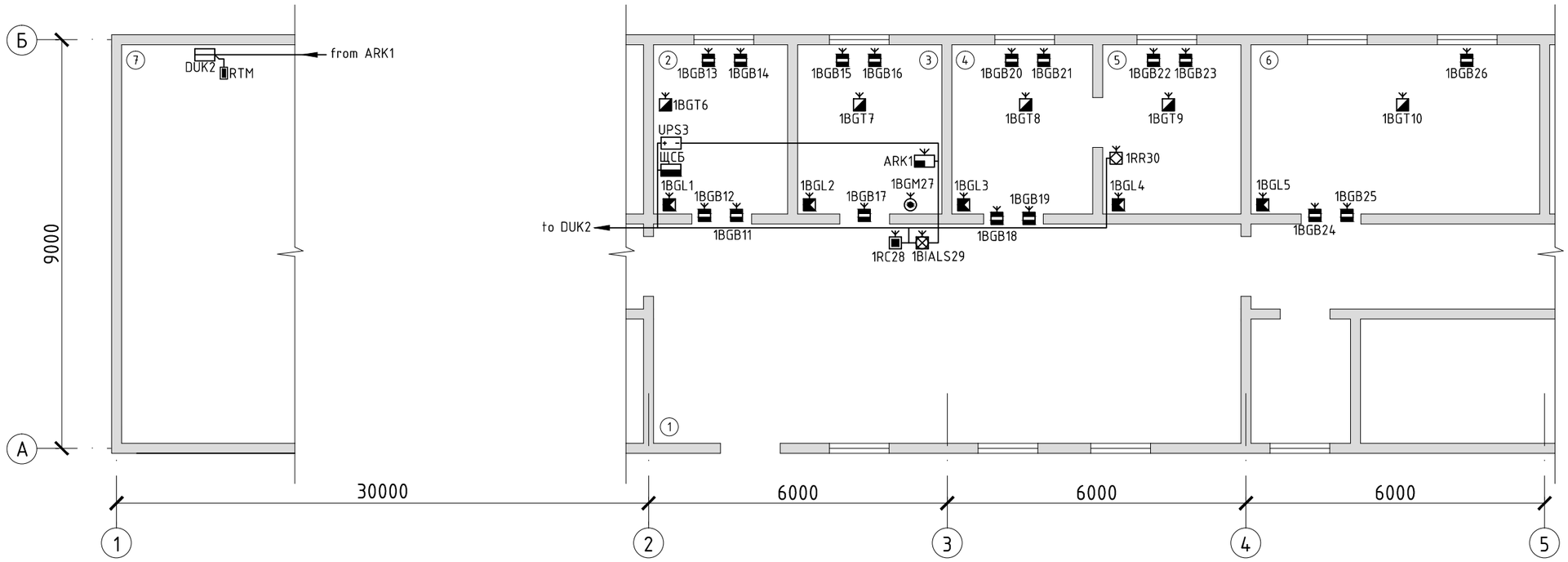
Инв. № подл.

Explication of premises

№	Name	Area, m2	Category premises for explosion and fire hazard
1	Hall	-	
2	Storeroom spare parts	9,2	Д
3	Equipment room	10,1	Д
4	Laboratory	9,5	Д
5	Detector	9,8	Д
6	RBG	19,3	В3
7	Duty shift room	-	



Installation instructions:
1. Install the Астра-812 Pro device, ARK1 marking on a metal mounting plate 400x350mm thick. 1mm.
2. Display unit Астра-863 isp. B with reader, DUK2 and RTM marking, mount on a metal mounting panel 450x450mm thick. 1mm.
3. Position the Астра-6131 detector, marking 1BGT4 so that the detection zone blocks the window and the door.
4. Lay the cable lines openly on the brackets behind the false ceiling, lower the cables to the equipment in the cable channel 25x16mm.
5. Passing cables through walls, partitions and ceilings should be made in a smooth PVC pipe d20mm. Seal the passages with non-combustible material.

Chang	Party	Sheet	№ doc.	Signature	Date
Developed		Sinelnikov			03.21.
CPE		Sinelnikov			03.21.
Reg.control		Ivanov			03.21.

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Radionuclide IMS station RN60

Security alarm system

Stage	Sheet	Sheets
D	3	

Layout of equipment and cable routes

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Listofworkingdrawingsofthemainset

Sheet	Name	Note
4	Generaldata	
5	Equipmentconnectiondiagram	

Listofreferenceandattacheddocuments

Designations	Name	Note
	Attacheddocuments	
3102021-FS1.CR	Cablerecord	on2sheets
3102021-FS1.SE	Specificationofequipment,productsand	on5sheets
	materials	
3102021-FS1.SP	Sparepartskitlist	on1sheet
3102021-FS1. CA	Constructionassignmenttothecustomer	on1sheet

GENERAL INSTRUCTIONS

1. General data

This section of the working documentation provides for the creation of fire alarm systems (hereinafter FAS) and burglar alarms (hereinafter SAS) in the building of the MSM RN60 radionuclide station, located at the address: Kamchatka Territory, Petropavlovsk-Kamchatsky, st. Shchorsa, 31.

2. Installation instructions

The installation of technical equipment, commissioning, testing and commissioning of the FAS and SAS shall be carried out in accordance with the requirements РД 78.145-93, СП 3.13130.2009, СП 5.13130.2009, СП 484.131500.2020, СП 6.13130.2013, СП 76.13330.2016, СТО НОСТРОЙ 2.15.10-2011 and technical documentation for the equipment used.

Upon completion of installation, commissioning, testing and commissioning of the FAS and SAS, dismantle the existing FAS and SAS equipment.

When laying cable lines, follow the requirements of СП 6.13130.2013, СП 76.13330.2016, СП 256.1325800.2016 and ПУЭ.

Installation and commissioning of technical means of the FAS must be carried out by a specialized organization that has an appropriate permit (license). Deviations from design documentation during installation are not allowed without agreement with the design organization - the project developer.

The maintenance, technical maintenance and scheduled preventive maintenance of the FAS and the SAS shall be carried out in accordance with the requirements of ГОСТ Р 54101-2010.

3. Safety requirements

To work on installation and commissioning of technical means of FAS and SAS are allowed persons who have undergone safety instructions when working with electrical installations up to 1000V, who have a qualification group of at least 3 for the right to work in electrical installations with a voltage of up to 1000V and who have studied this project and technical documentation for the equipment that is part of the FAS and SAS.

When performing installation and commissioning of technical means of FAS and SAS, it is necessary to comply with the requirements of СНиП 12-03-2001, the Rules for labor protection during the operation of electrical installations, the Rules for the fire regime in the Russian Federation and technical documentation for the equipment used.

4. Environmental protection

This section of the working documentation was developed in compliance with sanitary standards and using equipment and materials that do not emit harmful substances into the environment and do not produce noise exceeding the permissible standards.

Equipment and materials offered for use in design documentation have certificates of conformity of the Russian Federation.

5. Normative and referenced documents

1. Federal Law of the Russian Federation of July 22, 2008 N 123-ФЗ "Technical regulations on fire safety requirements."
2. Decree of the Government of the Russian Federation of February 16, 2008 N 87 "On the composition of sections of project documentation and requirements for their content."
3. Decree of the Government of the Russian Federation of September 16, 2020 N 1479 "Rules of the fire regime in the Russian Federation."
4. ГОСТ Р 21.1101-2013 Basic requirements for design and working documentation.
5. ГОСТ 31565-2012 Cable products. Fire safety requirements.
6. ГОСТ Р 54101-2010 Automation and control systems. Security means and systems. Maintenance and running repairs.
7. СНиП 12-03-2001 Labor safety in construction.
8. СП 3.13130.2009 Fire protection systems. The system of warning and management of evacuation of people in case of fire. Fire safety requirements.
9. СП 5.13130.2009 Fire protection systems. Automatic fire alarm and extinguishing installations. Norms and rules of design.
10. СП 484.131500.2020 Fire protection systems. Fire alarm systems and automation of fire protection systems Norms and rules of design.
11. СП 6.13130.2013 Fire protection systems. Electrical equipment. Fire safety requirements.
12. СП 51.13330.2011 Noise protection.
13. СП 76.13330.2016 Electrical devices.
14. СП 256.1325800.2016 Electrical installations of residential and public buildings. Design and installation rules.
15. ПУЭ edition 7.
16. РД 78.145-93 Systems and complexes of security, fire and security and fire alarm systems. Rules for the production and acceptance of works.
17. Р 083-2019 Norms and rules for the design of security systems at facilities guarded (taken under protection) by non-departmental security units.
18. СТО НОСТРОЙ 2.15.10-2011 Security and fire alarm systems, warning and evacuation control systems, access control and management systems, security television systems. Installation, commissioning and commissioning.

Chang	Party	Sheet	№ doc.	Signature	Date
Developed		Sinelnikov			03.21.
CPE		Sinelnikov			03.21.
Reg.control		Ivanov			03.21.

3102021-FS1

RadionuclideIMSstationRN60

Firealarmsystem.
Securityalarmsystem

Стадия	Лист	Листов
W	4	

Generaldata

Согласовано

Взам. подл. №

Подпись и дата

Инв. № подл.

A3format

ELD
ДПА-2104
L
N
AC220V
M1
UPS7
РИП-24 исп. 06
XT2
XT1
24V
K1
K2
K3
R1
XP3
AC220V
R1=3,9 кОм
IS
Астра-А ИЛС
L1
L2
A
B
+
−
ARK1
Астра-8945 Pro
Цепь
U1
GND
RELAY1
Zone1
Zone2
B1
B2
B3
B4
485 A
485 B
OC1
OC2
OC3
RMC2
Астра-814 Pro
485A
485B
RS3
Астра-РИ-М РР
СРК
СРК-DM
48
49
1SC1
VS425
A1
A2
11
21
31
41
12
22
32
42
AC380V
shut off ventilation
PSS
AB 1A B
AB 3A B
AB 3A B
AB 10A B
PH-111M
neutral
ground
PE
M1
AC220V
AB10A from IDD
M2
DUK6
Астра-863 исп. А
RS5
RS4
K4
K5
K6
1RC28
Астра-8131
1BIALS29
Астра-2331
1RS30
RTM
Считыватель-2
СЧ
Общий
Инд
white
black
red
DUK2
Астра-863 исп. Б
+TM
-TM
Out
UPS3
РИП-12 исп. 18
XP1
XT1
12V
OK
ARK1
Астра-812 Pro

Chang	Party	Sheet	№ doc.	Signature	Date
Developed		Sinelnikov			03.21.
CPE		Sinelnikov			03.21.
Reg.control		Ivanov			03.21.

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Radionuclide IMS station RN60

Fire alarm system.
Security alarm system

Stage	Sheet	Sheets
W	5	

Equipment connection diagram

Согласовано

Взам. подл. №

Подпись и дата

Инв. № подл.

A3 format

Designation cable	Cable route		Cable route section	Cable		Cable laying, m				Total length cable, m	Note
	Beginning	Ending		Cable type	Number, size of cable cores	open	in tray, box	in the pipe	on the rope		
Fire alarm system											
K1	ARK1	RMC2	equipment room	КИС-Внг(А)-FRLS	2х2х0,64	–	1	–	–	1	
K1	RMC2-IS	IS-RS3	equipment room/	КИС-Внг(А)-FRLS	2х2х0,64	9	2	1	–	12	
			/laboratory								
K1	RS3-IS	IS-RS4	laboratory	КИС-Внг(А)-FRLS	2х2х0,64	–	1	–	–	1	
K1	RS4-IS	IS-RS5	equipment room	КИС-Внг(А)-FRLS	2х2х0,64	–	1	–	–	1	
K1	RS5-IS	IS-DUK6	laboratory/	КИС-Внг(А)-FRLS	2х2х0,64	46	3	1	–	50	
			/duty shift room								
K1	DUK6-IS	IS-ARK1	laboratory/	КИС-Внг(А)-FRLS	2х2х0,64	44	5	1	–	50	
			/duty shift room								
			Total:	КИС-Внг(А)-FRLS	2х2х0,64	99	13	3	–	115	
K2	UPS7	IS-ARK1	storeroom spare parts/	КСРВнг(А)-FRLS	1х2х0,97	12	2	1	–	15	
			/equipment room								
K2	ARK1	RMC2	equipment room	КСРВнг(А)-FRLS	1х2х0,97	–	1	–	–	1	
K2	RMC2-IS	IS-RS3	equipment room	КСРВнг(А)-FRLS	1х2х0,97	10	2	1	–	13	
			/equipment room								
K2	RS3-IS	IS-RS4	equipment room	КСРВнг(А)-FRLS	1х2х0,97	–	2	–	–	2	
K2	RS4-IS	IS-RS5	equipment room	КСРВнг(А)-FRLS	1х2х0,97	–	2	–	–	2	
K2	UPS7	IS-DUK6	storeroom spare parts/	КСРВнг(А)-FRLS	1х2х0,97	40	5	1	–	46	
			/duty shift room								
K2	DUK6	IS	duty shift room	КСРВнг(А)-FRLS	1х2х0,97	–	1	–	–	1	
K2	ARK1	1SC1	equipment room/	КСРВнг(А)-FRLS	1х2х0,97	11	2	2	–	15	
			/storeroom spare parts								
			Total:	КСРВнг(А)-FRLS	1х2х0,97	73	17	5	–	95	
K3	ARK1	UPS7	equipment room/	КСРВнг(А)-FRLS	4х0,5	11	2	1	–	14	
			/storeroom spare parts								
K3	ARK1	CPK	equipment room/RBG	КСРВнг(А)-FRLS	4х0,5	14	2	–	–	16	
			Total:	КСРВнг(А)-FRLS	4х0,5	25	4	1	–	30	

Согласовано

Взам. подл. №

Подпись и дата

Инв. № подл.

Chang	Party	Sheet	№ doc.	Signature	Date
Developed		Sinelnikov			03.21
CPE		Sinelnikov			03.21
Reg.control		Ivanov			03.21

310/2021-FS1.CR

Cable record

Stage	Sheet	Sheets
W	1	2

A4 format

Designation cable	Cable route		Cable route section	Cable		Cable laying, m				Total length cable, m	Note
	Beginning	Ending		Cable type	Number, size of cable cores	open	in tray, box	in the pipe	on the rope		
M1	IDD	PSS	storeroom spare parts	ВВГнг(А)-FRLS	3х1,5	–	2	2	–	4	
M1	PSS	UPS7	storeroom spare parts	ВВГнг(А)-FRLS	3х1,5	–	2	–	–	3	
M1	PSS	ELD	storeroom spare parts/	ВВГнг(А)-FRLS	3х1,5	11	2	1	–	14	
			/equipment room								
			Total:	ВВГнг(А)-FRLS	3х1,5	11	6		–	20	
								3			
Security alarm system											
K4	ARK1	DUK2	equipment room/	КИС-Внг(А)-LS	2х2х0,60	44	5	1	–	50	
			/duty shift room								
			Total:	КИС-Внг(А)-LS		44	5	1	–	50	
K5	UPS3	ARK1	storeroom spare parts/	КСВВнг(А)-LS	1х2х0,97	8	2	1	–	11	
			/equipment room								
K5	ARK1	1RC13	equipment room/hall	КСВВнг(А)-LS	1х2х0,97	4	2	1	–	7	
K5	1RC13	1BIALS14	hall	КСВВнг(А)-LS	1х2х0,97	–	2	–	–	2	
K5	1BIALS14	1RR24	hall/detector	КСВВнг(А)-LS	1х2х0,97	8	2	–	–	10	
			Total:	КСВВнг(А)-LS	1х2х0,97	20	8	2	–	30	
K6	UPS3	ARK1	storeroom spare parts/	КСВВнг(А)-LS	4х0,5	8	2	1	–	11	
			/equipment room								
K6	DUK2	Считыватель-2	duty shift room	КСВВнг(А)-LS	4х0,5	–	1	–	–	1	
			Total:	КСВВнг(А)-LS	4х0,5	8	3	1	–	12	
M2	PSS	UPS3	storeroom spare parts	ВВГнг(А)-LS	3х1,5	–	3	–	–	3	
			Total:	ВВГнг(А)-LS	3х1,5	–	3	–	–	3	

Согласовано

Взам. подл. №

Подпись и дата

Инв. № подл.

Chang	Party	Sheet	№ doc.	Signature	Date

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Sheet 2

Формат А4

Symbol	Name and specifications	Type, brand, designation of the document, questionnaire	Product code	Manufacturer	Unit of measu-rement	Qty	Weight 1 unit, kg	Note
	Fire alarm system							
	Equipment							
ARK	1. Fire alarm control panel	Астра-8945 Pro		ТЭКО	pcs.	1		
	2. Communication module	Астра-GSM (ПАК Астра)		ТЭКО	pcs.	1		
	3. Interface module	Астра-RS-485		ТЭКО	pcs.	1		
RMC	4. Monitoring and control panel	Астра-814 Pro		ТЭКО	pcs.	1		
DUK	5. Display unit	Астра-863 исп. А		ТЭКО	pcs.	1		
RS	6. Radio expander	Астра-РИ-М РР		ТЭКО	pcs.	3		
UPS	7. Redundant power supply	РИП-24 исп. 06		Болид	pcs.	1		
IS	8. Communication line isolator	Астра-А ИЛС		ТЭКО	pcs.	10		
BTH	9. Optical-electronic smoke detector	Астра-421 исп. РК		ТЭКО	pcs.	10		
	radio channel							
BTM	10. Manual radio channel fire detector	Астра-4511		ТЭКО	pcs.	4		
BIALS	11. Combined fire alarm radio channel	Астра-2331		ТЭКО	pcs.	6		
SC	12. Modular contactor, 440V/25 A, 4NC, AC/DC 24V	VS425-04		ELKO EP	pcs.	1		

Согласовано

Взам. подл. №

Подпись и дата

Инв. № подл.

Chang	Party	Sheet	№ doc.	Signature	Date
Developed		Sinelnikov			03.21
CPE		Sinelnikov			03.21
Reg.control		Ivanov			
					03.21

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Specification of equipment, products and materials

Stage	Sheet	Sheets
W	1	5

A4 format

Symbol	Name and specifications	Type, brand, designation of the document, questionnaire	Product code	Manufacturer	Unit of measu-rement	Qty	Weight 1 unit, kg	Note
	Materials and installation products							
	1. Interface box	Астра-984		ТЭКО	pcs.	1		
	2. Storage battery, 12V/26 Axh	DTM1226		Delta	pcs.	2		
	3. Emergency lamp	ДПА-2104		IEK	pcs.	1		
	4. Modular box, 8 mod., wall	ЩРН-П-8		IEK	pcs.	1		
	5. Voltage relay AC 220V/16A	РН-111М		Новатек Электро	pcs.	1		
	6. Circuit breaker, 10A	ВА47-29-1Р 10А В		IEK	pcs.	2		
	7. Circuit breaker, 3A	ВА47-29-1Р 3А В		IEK	pcs.	1		
	8. Circuit breaker, 1A	ВА47-29-1Р 1А В		IEK	pcs.	1		
	9. Bus N on DIN insulator	ШНИ 6Х9-8		IEK	pcs.	1		
	10. Bus PEN on DIN insulator	ШНИ 6Х9-8		IEK	pcs.	1		
	11. Connecting bus, PIN, 8, 1P, 63A			IEK	pcs.	1		
	12. Cable channel, Elecor, 25x16mm			IEK	m	20		
	13. Fittings for cable channel, Elecor, 25x16mm			IEK	pcs.	6		
	14. Corrugated PVC pipe, d = 16mm, gray			IEK	m	4		
	15. Single-leg bracket, galvanized steel	СМО 8-9		Fortisflex	pack	11		pack 100 pcs.
	16. Single-leg bracket, galvanized steel	СМО 16-17		Fortisflex	pack	0,2		pack 100 pcs.

Согласовано

Взам. подл. №

Подпись и дата

Инв. № подл.

Chang	Party	Sheet	№ doc.	Signature	Date

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Sheet 2

A4 format

Symbol	Name and specifications	Type, brand, designation of the document, questionnaire	Product code	Manufacturer	Unit of measu-rement	Qty	Weight 1 unit, kg	Note
	17. Mounting metal sheet 610x460mm, thick. 1mm				pcs.	1		
	18. Mounting metal sheet 450x450mm, thick. 1mm				pcs.	1		
	19. Smooth PVC pipe, d = 20mm, gray, L = 2m			IEK	pcs.	4		
	20. Fire-resistant assembly foam, cylinder gun	SOUDAFOAM FR		SOUDAL	pcs.	1		
	Cable production							
K1	1. Cable RS485, cross-section 2x2x0.64mm	КИС-РВнг(А)-FRLS		Паритет	m	115		
K2	2. Cable for signaling systems, cross-section 1x2x0.97mm	КСРВнг(А)-FRLS		Паритет	m	95		
K3	3. Cable for signaling systems, cross-section 4 x0,5мм	КСРВнг(А)-FRLS		Паритет	m	30		
M1	4. Power cable, cross-section 3x1.5mm2	ВВГнг(А)-FRLS		Спецкабель	m	20		

Согласовано

Взам. подл. №

Подпись и дата

Инв. № подл.

Chang	Party	Sheet	№ doc.	Signature	Date

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Sheet 3

A4 format

Symbol	Name and specifications	Type, brand, designation of the document, questionnaire	Product code	Manufacturer	Unit of measu-rement	Qty	Weight 1 unit, kg	Note
	Security alarm system							
	Equipment							
ARK	1. Fire alarm control panel	Астра-812 Pro		ТЭКО	pcs.	1		
	2. Communication module	Астра-GSM (ПАК Астра)		ТЭКО	pcs.	1		
DUK	3. Display unit	Астра-863 исп. Б		ТЭКО	pcs.	1		
	4. Reader Touch Memory	Считыватель-2		Болид	pcs.	1		
RR	5. Radio expander	Астра-РИ-М РР		ТЭКО	pcs.	1		
RC	6. Radio channel control panel	Астра-8131		ТЭКО	pcs.	1		
UPS	7. Redundant power supply	РИП-12 исп. 18		Болид	pcs.	1		
BGL	8. Surround security detector optoelectronic passive	Астра-5131 исп. А		ТЭКО	pcs.	5		
	radio channel							
BGT	9. Surface security sound detector radio channel	Астра-6131		ТЭКО	pcs.	5		
BGB	10. The detector is a security point magnetic contact	Астра-3321		ТЭКО	pcs.	16		
	radio channel							
BGM	11. Electrical contact point security detector	Астра-3221		ТЭКО	pcs.	1		
	radio channel							
BIALS	12. Combined security alarm radio channel	Астра-2331		ТЭКО	pcs.	1		
	Materials and installation products							
	1. Storage battery, 12V/17Axh	DTM1217		Delta	pcs.	1		

Согласовано

Взам. подл. №

Подпись и дата

Инв. № подл.

Chang	Party	Sheet	№ doc.	Signature	Date

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Sheet 4

A4 format

Symbol	Name and specifications	Type, brand, designation of the document, questionnaire	Product code	Manufacturer	Unit of measu-rement	Qty	Weight 1 unit, kg	Note
	2. Key Touch Memory	DS-1990A		Dallas	pcs.	4		
	3. Circuit breaker, 3A	BA47-29-1P 3A B		IEK	pcs.	1		
	4. Cable channel, Elecor, 25x16mm			IEK	m	12		
	5. Fittings for cable channel, Elecor, 25x16mm			IEK	pcs.	6		
	6. Single-leg bracket, galvanized steel	CMO 8-9		Fortisflex	pack	4		pack 100 pcs.
	7. Mounting metal sheet 450x450mm, thick. 1mm				pcs.	1		
	8. Mounting metal sheet 400x350mm, thick. 1mm				pcs.	1		
	9. Smooth PVC pipe, d = 20mm, gray, L = 2m			IEK	pcs.	2		
	10. Fire-resistant assembly foam, cylinder gun	SOUDAFOAM FR		SOUDAL	pcs.	1		
	Cable production							
K4	1. Cable RS485, cross-section 2x2x0.60mm	КИС-Внг(А)-LS		Паритет	m	50		
K5	2. Cable for signaling systems, cross-section 1x2x0.97mm	КСВВнг(А)-LS		Паритет	m	30		
K6	3. Cable for signaling systems, cross-section 4x0.5mm	КСВВнг(А)-LS		Паритет	m	12		
M2	4. Power cable, cross-section 3x1.5mm2	ВВГнг(А)-LS		Спецкабель	m	3		

Согласовано

Взам. подл. №

Подпись и дата

Инв. № подл.

Chang	Party	Sheet	№ doc.	Signature	Date

310/2021-FS1.SE

Sheet 5

A4 format

Designation spare parts	Code product	Spare part name	A place stacking	Applicability	Quantity in the product, pcs.	Quantity in a set, pcs.	Note
		Fire alarm system					
IS	26.30.50.129	1. Communication line insulator Астра-А ИЛС	-	-	2	-	-
BTH	26.30.50.121	2. Optical-electronic smoke detector radio channel Астра-421 исп. РК	-	-	2	-	-
BTM	26.30.50.121	3. Manual radio channel fire detector Астра-4511	-	-	1	-	-
BIALS	26.30.50.123	4. Combined radio channel fire alarm Астра-2331	-	-	1	-	-
		Security alarm system					
BGL	26.30.50.111	1. Surround security detector optoelectronic passive radio channel Астра-5131 исп. А	-	-	1	-	-
BGT	26.30.50.111	2. Surface security sound detector radio channel Астра-6131	-	-	1	-	-
BGB	26.30.50.111	3. The detector is a security point magnetic contact radio channel Астра-3321	-	-	2	-	-
BGM	26.30.50.111	4. Electrical contact point security detector radio channel Астра-3221	-	-	1	-	-
BIALS	26.30.50.114	5. Combined security alarm radio channel Астра-2331	-	-	1	-	-

Согласовано

Взам. подл. №

Подпись и дата

Инв. № подл.

Chang	Party	Sheet	№ doc.	Signature	Date
Developed		Sinelnikov			03.21
CPE		Sinelnikov			03.21
Reg.control		Ivanov			03.21

310/2021-FS1.SP

Spare parts kit list

Stage	Sheet	Sheets
W		1

A4 format

Construction assignment to the customer

1. Assignment for power supply

FAS and SAS technical means belong to category I in terms of power supply reliability.

Power supply shall be carried out from the input distribution device of the Object (hereinafter referred tc as the IDD) from a single-phase industrial AC network with a rated voltage of 220V and a frequency of 50Hz with voltage deviations from -15% to + 10% and a frequency of + 1% of the rated value.

To organize the power supply of the technical means of the FAS and SAS, install a power security shielc (hereinafter referred to as the PSS) in the spare parts store. For PSS use modular box ЩРН-П-8. Install a voltage relay РН-111М in the PSS, an input circuit breaker ВА47-29 1Р/10А, two ВА47-29 1Р/3А circuit breakers and a ВА47-29 1Р/1А circuit breaker.

Connect the redundant power supply РИП-24 исп. 06 and a redundant power supply РИП-12 исп. 18 to the automatic switches ВА47-29 1Р/3А. Connect the ДПА-2104 emergency lighting lamp to the ВА47-29 1Р/1А circuit breaker.

The total installed capacity of electrical consumers is 330 VA, including:

- redundant power supply РИП-24 исп. 06 - 225 VA;
- redundant power supply РИП-12 исп. 18 - 100 VA;
- emergency lighting lamp ДПА-2104 - 5 VA.

The power supply of the PSS should be provided from the IDD with the installation of the ВА47-29 1Р/10А circuit breaker.

The cable power supply lines should be made with ВВнг(А)-FRLS 3х1,5мм2 and ВВГнг(А)-LS 3х1,5мм2 cables. Lay cable lines in a cable channel and in a flexible corrugated pipe.

Protective grounding (grounding) must be performed in accordance with the requirements of ПУЭ-7 and СП 76.13330.2016.

2. Assignment on the organization of the notification transmission system

For the automatic transmission of voice messages and notifications in the SMS format when the Fault, Attention, Fire and Alarm signals are generated to the phone of the responsible person of the economic agency, without the participation of the facility personnel, the Астра-GSM (ПАК Астра) switching module installec in the Астра-8945 and Астра-812 Pro devices is used.

The customer needs to purchase two SIM-cards from different mobile operators for each device, one SIM-card is the main one, the second SIM-card is a reserve one and give them to the installation and commissioning organization.

Согласовано

Взам. подл. №

Подпись и дата

Инв. № подл.

Chang	Party	Sheet	№ doc.	Signature	Date
Developed		Sinelnikov			03.21
CPE		Sinelnikov			03.21
Reg.control		Ivanov			03.21

3102021-FS1.CA

Constructionassignmenttothe customer

Stage	Sheet	Sheets
W		1

A4format

Explanatory note of estimate documentation

1. General Provisions

This section of the estimate documentation for the creation of a fire alarm system and a security alarm system at the IMS RN60 radionuclide station at the address: 683032, Kamchatskiy Krai, Petropavlovsk-Kamchatskiy, Shchorsa Str. 31. developed on the basis of design documentation 310/2021-FS1.

Determination of the cost of work was carried out in the federal estimate and regulatory framework of 2020 (ФСНБ-2020) by the base-index calculation method (ФЕР-2020), on the basis of methodological normative documents in accordance with the order of the Ministry of Construction of Russia № 421/пр dated 04.08.2020 "On approval of the Methodology for determining the estimated cost of construction, reconstruction, overhaul, demolition of capital construction, works to preserve cultural heritage (historical and cultural monuments) of the peoples of the Russian Federation on the territory of the Russian Federation."

2. The procedure for determining the estimated cost of work

The cost of construction and installation works in the estimate documentation was determined using collection № 67 (ФЕРр-2017) and collections No. 8, No. 10, No. 11 (ФЕРм) at the current price level as of the IV quarter of 2020 with a conversion factor K = 18.13 on the basis of the letter of the Ministry of Construction of Russia No. 54145-ИФ/09 dated 30.12.2020. (Appendix 1, Far Eastern Federal District, Kamchatka Krai, Other objects).

The cost of commissioning works in the estimate documentation was determined using the collection № 2 (ФЕРп) for commissioning at the current price level as of the IV quarter of 2020 with a conversion factor K = 53.02 based on the letter of the Ministry of Construction of Russia № 54145-ИФ/09 dated 30.12.2020 (Appendix 1, Far Eastern Federal District, Kamchatka Krai, Commissioning works), in addition, a reduction coefficient K = 0.32 was applied to the labor costs and wages of commissioning personnel.

Overhead costs are determined as a percentage of the amount of funds for wages of construction workers and machine operators in accordance with the "Methodological guidelines for determining the amount of overhead costs in construction carried out in the Far North and localities equated to them" (МДС 81-34.2004).

The estimated profit is determined as a percentage of the amount of funds for the remuneration of construction workers and machine operators in accordance with the "Methodological Guidelines for Determining the Estimated Profit in Construction" (МДС 81-25.2001), an additional reduction coefficient K = 0.9 is applied in accordance with the letter of the Federal Agency for construction and housing and communal services № АП-5536/06 dated 18.11.2004.

3. The procedure for determining the estimated cost of material resources

The cost of equipment not taken into account by the price tag of federal estimated prices for materials, products and structures used in construction (ФССЦ) was analyzed by the retail network, taking into account delivery to the Kamchatka Krai, Petropavlovsk-Kamchatsky: determined by reverse counting from current prices as of the IV quarter of 2020 with a conversion factor K = 4.51 based on the letter of the Ministry of Construction of Russia № 45484-ИФ/09 dated 12.11.2020. (Appendix 4, p. 30, By non-production facilities).

The cost of materials not included in the price tag of federal estimated prices for materials, products and structures used in construction (ФССЦ) was analyzed by the retail network, taking into account delivery to the Kamchatka Krai, Petropavlovsk-Kamchatsky: determined by reverse counting from current prices as of the IV quarter of 2020 with a conversion factor K = 18.13 based on the letter of the Ministry of Construction of Russia № 54145-ИФ/09 dated 12/30/2020. (Appendix 1, Far Eastern Federal District, Kamchatka Territory, Other objects).

The consolidated estimate of the construction cost was carried out using the program for drawing up the estimate documentation "ГРАНД-СМЕТА 2020".

Согласовано

Взам. подл. №

Подпись и дата

Инв. № подл.

Chang	Party	Sheet	№ doc.	Signature	Date
Developed		Sinelnikov			03.21
CPE		Sinelnikov			03.21
Reg.control		Ivanov			03.21

3102021-ED1.EN

Explanatorynoteofestimate documentation

Stage	Sheet	Sheets
W		1

Customer: Comprehensive Nuclear-Tests-Ban Treaty Organization

(name of company)

"Approved" "____" _____ 2021

Consolidated estimated calculation in the amount 12 135,00 USD

(link to approval document)

CONSOLIDATED ESTIMATE OF THE COST OF CONSTRUCTION

for the creation of a fire alarm system and a security alarm system in the radionuclide station IMS RN60 at the address: Kamchatskiy Krai, Petropavlovsk-Kamchatskiy, Shchorsa, Str. 31

(name of the construction site (object being repaired)

Compiled in prices as of the IV quarter of 2020

№	Estimated numbers and estimates	Name of chapters, objects, works and costs	Estimated cost				Total estimated cost, thousand rubles
			construction (repair and construction) works	installation works	equipment, furniture and inventory	other costs	
1	2	3	4	5	6	7	8
		Chapter 2. Main construction objects					
1	Estimated calculation (local estimate calculation)	Creation of a fire alarm system and a security alarm system, (thousand rubles)	25,552	264,371	256,995	345,128	892,046
		Total for chapter 2 (thousand rubles)	25,552	264,371	256,995	345,128	892,046
2		TOTAL (thousand rubles)	25,552	264,371	256,995	345,128	892,046
3		TOTAL US dollars (at the rate of the Central Bank of the Russian Federation as of 15.03.2021, 1 USD=73,5081 RUB)	348,00	3 596,00	3 496,00	4 695,00	12 135,00

Head of the design organization S.V. Shevchenko

(signature, initials, surname)

Chief Project Engineer S.V. Sinelnikov

(signature, initials, surname)

Customer

(position, signature, initials, surname)

ATTACHMENT 1 TO TERMS OF REFERENCE

Certificate No. 10973 dated May 25, 2015

Copy 1

Copies 2

Comprehensive Nuclear-Tests-Ban Treaty Organization

Radionuclide IMS station RN60

DESIGN and WORKING DOCUMENTATION

Section 9 "Measures to ensure fire safety"
Part 1 "Fire alarm system. Security alarm system"

310/2021-FS1

Volume 1

Изм.	№ док.	Подпись	Дата

2021

ООО "Sigma-K" (Limited Liability Company)

Certificate No. 10973 dated May 25, 2015

Comprehensive Nuclear-Tests-Ban Treaty Organization

Radionuclide IMS station RN60

DESIGN and WORKING DOCUMENTATION

Section 9 "Measures to ensure fire safety"
Part 1 "Fire alarm system. Security alarm system"

310/2021-FS1

Volume 1

Взам. подл. №

Подпись и дата

Инв. № подл.

Изм.	№ док.	Подпись	Дата

2021

Volume content

Designation	Name	Note
310/2021-FS1.VC	Volume content	2
310/2021-FS1.CD	Composition of design and working documentation	3
310/2021-FS1.EN	Explanatory note	4 - 11
310/2021-FS1-1	Structural scheme	12
310/2021-FS1-2	Layout of equipment and cable routes.	13
	Fire alarm system	
310/2021-FS1-3	Layout of equipment and cable routes.	14
	Security alarm system	
310/2021-FS1-4	General data	15
310/2021-FS1-5	Equipment connection diagram	16
310/2021-FS1.CR	Cable record	17 - 18
310/2021-FS1.SE	Specification of equipment, products and	19 - 23
	materials	
310/2021-FS1.SP	Spare parts kit list	24
310/2021-FS1.CA	Construction assignment to the customer	25
310/2021-ED1.EN	Explanatory note of estimate documentation	26
	Consolidated estimate of the cost	27
	of construction	

Согласовано

Взам. подл. №

Подпись и дата

Инв. № подл.

Chang	Party	Sheet	№ doc.	Signature	Date
Developed		Sinelnikov			03.21
CPE		Sinelnikov			03.21
Reg.control		Ivanov			03.21

310/2021-FS1.VC

Volume content

Stage	Sheet	Sheets
D		1

A4 format

Composition of design and working documentation

Volume number	Designation	Name	Note
1	310/2021-FS1	Section 9 "Measures to ensure fire safety"	
		Part 1 "Fire alarm system. Security alarm system"	

Согласовано

Взам. подл. №

Подпись и дата

Инв. № подл.

Chang	Party	Sheet	№ doc.	Signature	Date
Developed		Sinelnikov			03.21
CPE		Sinelnikov			03.21
Reg.control		Ivanov			03.21

310/2021-FS1.CD

Composition of design and working documentation

Stage	Sheet	Sheets
D		1

Content

Design documentation was developed in accordance with the urban planning plan land plot, design assignment, town planning regulations, technical regulations, including those establishing requirements for ensuring the safe operation of buildings, structures, structures and the safe use of adjacent territories, and in compliance with technical conditions.

Согласовано

Взам. подл. №

Подпись и дата

Инв. № подл.

Chang	Party	Sheet	№ doc.	Signature	Date
Director		Shevchenko			03.21
Developed		Sinelnikov			03.21
CPE		Sinelnikov			03.21
Reg.control		Ivanov			03.21

310/2021-FS1.EN

Explanatory note

Stage	Sheet	Sheets
D	1	8

A4 format

1. General data

This section of the design documentation was developed on the basis of term of reference "DEVELOPMENT OF DESIGN DOCUMENTATION FOR FIRE ALARM AND SAFEGUARDING SYSTEM AT IMS STATION RN60, PETROPAVLOVSK-KAMCHATSKYI, RUSSIAN FEDERATION" and provides for the creation of fire alarm system (hereinafter referred to as FAS) and security alarm system (hereinafter referred to as SAS) in the building of the radionuclide station IMS RN60 (hereinafter referred to as the Object), located at the address: 683032, Kamchatskiy Krai, Petropavlovsk-Kamchatskiy, Shchorsa Str. 31.

2. Brief description of the Object

The Object is located in a 1-storey building. The object occupies 5 adjacent rooms with access to a common corridor.

The walls and partitions of the building are made of cinder-concrete stones, the floor is made of reinforced concrete slabs, the interior decoration is plaster, sheathing with gypsum board, painting, an Armstrong type suspended ceiling.

The Object building belongs to the III category in terms of power supply reliability and is provided with an autonomous backup power supply from a diesel generator. Forced supply and exhaust ventilation. The fire resistance of the building is II. Functional fire hazard class of the facility - Ф5.1. The total protected area of the Facility is 57.9 m2.

The Object is equipped with a security and fire alarm system (hereinafter referred to as SFAS). The existing SFAS equipment is subject to dismantling - see table 1.

List of equipment to be dismantled

Table 1

№	Name of equipment and materials	Unit	Quantity
1	Fire alarm control panel ВЭРС-ПК-8	pcs.	1
2	Redundant power supply БИРП-12	pcs.	1
3	Smoke fire detector ИПД3.1	pcs.	10
4	Manual fire detector ИПР	pcs.	1
5	Powder extinguishing module Буран-2,5	pcs.	1
6	Light and sound annunciator Маяк-12	pcs.	3
7	Security magnetic contact detector ИО102-2	pcs.	16
8	Sound security detector Стекло	pcs.	6

3. Applied equipment

The construction of the FAS and SAS is carried out on the basis of the equipment of the facility system of the wireless security and fire alarm system Астра-Zитадель and Астра-РИ-М, manufacturer TEKO.

3.1. The FAS includes the following equipment:

3.1.1. Control and reception devices:

- fire and security control panel Астра -8945 Pro with communication module Астра -GSM (ПАК Астра) and interface module Астра-RS-485;
- control panel Астра-814 Pro;
- display unit Астра-863 исп. А.

3.1.2. Radio expanders:

- radio expander Астра-РИ-М РР.

3.1.3. Isolators, actuators:

- communication line insulator Астра-А ИЛС;
- modular contactor ELKO EP VS425-04.

3.1.4. Fire detectors and annunciators:

- optical-electronic radio channel fire alarm smoke detector Астра-421 исп. РК;
- manual radio channel fire detector Астра-4511;
- combined radio channel fire alarm Астра-2331.

3.1.5. Power Sources:

- redundant power supply РИП-24 исп. 06.

Согласовано

Взам. подл. №

Подпись и дата

Инв. № подл.

Chang	Party	Sheet	№ doc.	Signature	Date	3102021-FS1.EN	Sheet 2

A4format

3.2. The SAS includes the following equipment:

3.2.1. Control and reception devices:

- fire and security control panel Астра-812 Pro with Астра -GSM communication module (ПАК Астра);
- display unit Астра-863 исп. Б with Touch Memory reader;
- radio channel control panel Астра-8131.

3.2.2. Radio expanders:

- radio expander Астра-РИ-М РР.

3.2.3. Security detectors and annunciators:

- security detector volumetric optoelectronic passive radio channel Астра-5131 исп. А;
- security surface sound radio channel detector Астра-6131;
- radio channel magnetic contact point security detector Астра-3321;
- radio channel electrical point security alarm Астра-3221;
- combined radio channel security siren Астра-2331.

3.2.4. Power Sources:

- redundant power supply РИП-12 исп. 18.

4. Purpose and location of equipment

4.1. Technical means FAS are designed to detect a fire at an early stage and provide:

- control of the state of fire detectors and annunciators;
- control of the serviceability of communication lines with the detection of breakage and short circuit and control of the serviceability of technical means and the formation of the Malfunction signal;
- generation of Attention and Fire signals when smoke detectors are triggered;
- formation of a Fire signal when a manual fire detector is triggered;
- activation of light and sound annunciators when a Fire signal is generated;
- shutdown of the supply and exhaust ventilation and air conditioning system when the Fire signal is generated;
- control of fire alarm zones with display of their status on the Астра-863 исп. А;
- control of technical means of the FAS by means of the Астра-814 Pro remote control;
- registration and storage of information about all events in the non-volatile memory of the Астра-8945 Pro device;
- restricting access to control and programming functions;
- automatic transmission of voice messages and notifications in SMS format when the Malfunction, Attention and Fire signals are generated to the phone of the responsible person of the owner.

The Астра-8945 Pro device is designed to monitor the status and control of the technical means of the SPS connected to the RS485 ring interface using the Астра-RS-485 interface module, transmit voice messages and notifications in the SMS format when the Fault, Attention and Fire signals are generated to the phone of the responsible person of the owner through the communication module Астра-GSM (ПАК Астра). The Астра-814 Pro console, the Астра-863 исп. А and radio expanders Астра-РИ-М РР are connected to the RS485 ring interface.

The Астра-814 Pro remote control is designed to monitor the status and control of technical means that are connected to the Astra-8945 Pro device.

Block Астра-863 исп. А is intended for light and sound indication of the state of the FAS sections.

The Астра-РИ-М РР radio expander is designed to monitor the state of fire detectors and sirens by means of a radio channel in the 433.42 / 434.42 MHz operating frequency range and to transmit information to the Астра-8945 Pro device. Operating mode of the wireless expander System.

The Астра-А ИЛС communication line isolator is designed to maintain the functionality of the RS485 ring interface in the event of a short circuit or a break in the communication line.

The VS425-04 contactor is designed to turn off the supply and exhaust ventilation system by opening the power supply line of the ventilation system.

Smoke fire detector Астра-421 исп. РК is designed to detect a fire accompanied by the appearance of smoke and transmit Fault, Norm, Attention and Fire notifications to the Астра-РИ-М РР radio expander via a radio channel.

The Астра-4511 manual fire detector is designed to generate a Fire signal when the actuator of the detector is pressed and send Fault, Norm and Fire notifications to the Астра-РИ-М РР radio expander via the radio channel.

The combined fire alarm Астра-2331 is intended for light and sound warning of a fire on command from the Астра-РИ-М PP radio expander via the radio channel and transmitting Fault and Norm messages to the Астра-РИ-М PP radio expander via the radio channel.

Power supply РИП-24 исп. 06 is intended for power supply of technical means of FAS with a voltage of 24V. Transmission is provided. Power supply failure РИП-24 исп. 06 for the Астра-8945 Pro device.

The design documentation provides for the shutdown of the supply and exhaust ventilation and air conditioning system when the Fire signal is generated by supplying 24V power to the VS425-04 contactor from the Астра-8945 Pro device and closing the forced shutdown contacts on the СРК-ДМ air conditioner operation coordinator with the output of the Астра-8945 Pro device.

The design documentation provides for a fire warning and evacuation system (hereinafter referred to as FWES) of the 2nd type. For the organization of FWES, a combined fire annunciator Астра-2331 is used.

Algorithm of the FWES operation: Astra-2331 sirens in the Norm mode are disabled, when a Fire signal is generated, they are enabled.

FAS work algorithm:

- the Norm mode, the state in which all the technical means of the FAS are in the Norm mode, the light indication of the Norm is switched on on the technical means of the FAS;
- Fault mode, the state in which at least one technical means of the FAS is in the Fault mode while the Астра-814 Pro console and the Астра-863 исп. А the light and sound alarm is turned on, on the other technical means of the FAS, the light indication Fault is turned on, the Fault message is sent to the phone of the responsible person of the owner;
- Attention mode, the state in which the smoke threshold is exceeded Attention of the fire smoke detector Астра-421 исп. РК, while on the Астра-814 Pro console and the block Астра-863 исп. А, light and sound alarms are turnec on, the Attention message is sent to the phone of the responsible person of the owner;
- Fire mode, the state in which the smoke threshold is exceeded Fire of the fire smoke detector Астра-421 исп. РК or the actuator of the manual fire detector Астра-4511 is pressed, while on the Астра-814 Pro console and the Астра-863 исп. А the light and sound alarm is turned on, the ventilation and air conditioning system is turned off, the FWES is turned on and the Fire message is sent to the phone of the responsible person of the owner.

Install the Астра-8945 Pro device and the Астра-814 Pro remote control in the equipment room, install the Астра-РИ-М PP radio expanders in the laboratory, install the Астра-863 исп. А in the duty shift room, the power supply РИП-24 исп. 06 install the spare parts in the storeroom. Install fire detectors and sirens in accordance with equipment layout plans.

4.2. SAS technical means are designed to detect attempts to enter an object and provide:

- monitoring the status of security detectors and sirens;
- control of the serviceability of communication lines with the detection of breakage and short circuit and control of the serviceability of technical means and the formation of the Malfunction signal;
- formation and issuance of alarm signals in case of unauthorized entry or attempted entry into the protectec premises;
- formation and issuance of the Alarm signal when the alarm detector is triggered;
- activation of light and sound annunciators when the Alarm signal is generated;
- control of security alarm zones with display of their status on the Астра-863 исп. Б;
- control of the technical means of the SAS by means of the Астра-812 Pro device when dialing the PIN-code, the Астра-8131 remote control when dialing the PIN-code, the Астра-863 исп. Б when identifying the Touch Memory key;
- registration and storage of information about all events in the non-volatile memory of the Астра-812 Pro device;
- restricting access to control and programming functions;
- automatic transmission of voice messages and notifications in the SMS format when the Fault and Alarm signals are generated to the phone of the responsible person of the owner.

The Астра-812 Pro device is designed to monitor the status and control of the technical means of the SAS connected to the RS485 interface, monitor the status and control of security detectors and sirens, the Астра-8131 console and the Астра-РИ-М PP radio expander via a radio channel in the operating frequency range 433.42 / 434.42 MHz, the transmission of voice messages and notifications in the SMS format when the Fault and Alarm signals are generated to the telephone of the responsible person of the economic organization through the communication module Астра-GSM (ПАК Астра), Астра-863 исп. Б is connected to the RS485 interface.

Block Астра-863 исп. Б is intended for light and sound indication of the state of the SAS sections and control of arming and disarming SAS sections. Access to the management of sections is carried out by identifying the Touch Memory key with a contactless reader.

The Астра-8131 console is designed for light and sound indication of the state of the SAS sections and control of arming and disarming SAS sections. Access to the management of sections is carried out by entering the PIN-code.

The Астра-РИ-М РР radio expander is designed to receive notifications from security detectors and sirens and relay their status to the Астра-812 Pro device via a radio channel in the 433.42 / 434.42 MHz operating frequency range. Operating mode of the radio expander Repeater.

Security detector Астра-5131 исп. А is designed to detect intrusion into the protected area and transmit the Fault, Armed, Disarmed and Alarm messages to the Астра-812 Pro device via the radio channel.

The Астра-6131 security alarm detector is designed to detect glass breakage in a guarded room and transmit Fault, Armed, Disarmed and Alarm messages to the Астра-812 Pro device via the radio channel.

The Астра-3321 magnetic contact security detector is designed to block the opening of doors and windows and transmit Fault, Armed, Disarmed and Alarm to the Астра-812 Pro device via radio channel.

Combined security annunciator Астра-2331 is intended for information on the state of the SAS technical means in the following mode: Armed – the light annunciator is constantly on, Disarmed – the light annunciator is not on, Alarm – the light annunciator is on intermittently, the audible annunciator is on and notifications are transmitted Fault, On protection, Disarmed and Alarm to the Астра-812 Pro device via radio channel.

Power supply РИП-12 исп. 18 are intended for power supply of technical means of SAS with a voltage of 12V.

SAS operation algorithm:

– Armed mode, the state of the section (room, office, etc.) in which all the technical means of the SAS related to the section are in the Armed mode, the Armed light indication is turned on on the SAS technical means;

– Disarmed mode, the state of the section (room, office, etc.) in which all the SAS technical means related to the section are in the Disarmed mode, the Disarmed light indication is on on the SAS hardware;

– Fault mode, a state in which at least one technical means of the SAS is in the Fault mode while on the Астра-812 Pro device and the Астра-863 исп. Б light and sound alarms are turned on, on the other technical means of the SAS, the light indication Fault is turned on, a Fault message is sent to the phone of the responsible person of the owner;

– Alarm mode, the state in which at least one security detector is in Alarm mode, while the Астра-812 Pro device and the Астра-863 исп. Б the light and sound alarm is switched on, the Alarm message is sent to the phone of the responsible person of the owner.

Install the Астра-812 Pro device in the control room, install the Астра-РИ-М РР radio expander in the detector room, install the Астра-8131 remote control in front of the control room entrance, Астра-863 исп. Б install in the duty shift room, power source РИП-12 исп. 18 install in the storeroom of spare parts. Install security detectors and sirens in accordance with the equipment layout plans.

5. Power supply

According to the degree of ensuring the reliability of power supply, the consumers of the FAS and SAS belong to the 1st category.

The Object belongs to the III category in terms of power supply reliability and is provided with an autonomous backup power supply from a diesel generator, in connection with this project, it is envisaged to use power sources with rechargeable batteries, which, in the absence of the main voltage, ensure the operation of the FAS technical means in standby mode for 24 hours and in the alarm mode for 1 hour and the operation of the technical means of the SAS in the standby mode for 24 hours and in the alarm mode for 3 hours.

Power supply for the Астра-8945 Pro device, Астра-814 Pro remote control, Астра-863 исп. А unit, radio expanders Астра-РИ-М РР and isolators of the communication line Астра-А ИЛС is provided from the power source РИП-24 исп. 06.

Power supply for the Астра-812 Pro device, the Астра-863 исп. Б unit, the Астра-8131 remote control, the Астра-РИ-М РР radio expander and the Астра-2331 siren are provided from the РИП-12 исп. 18.

Power supply of power supplies РИП-24 исп. 06 и РИП-12 исп. 18 is provided from a single-phase electrical network with a voltage of 220V / 50Hz from separate circuit breakers of the security system shield.

Backup power supply РИП-24 исп. 06 and РИП-12 исп. 18 is provided from storage batteries (see Table 2).

Power supply and protective grounding are provided by the customer in accordance with the attached construction assignment (see sheet 310/2021-FS1.CA).

Table 2

Designation on the project	Name current consumption equipment	Quantity, pcs.	Consumption current, mA		Total current consumption, mA	
			Standby mode	Alarm	Standby mode	Alarm
UPS7	Астра-8945 Pro	1	140	140	140	140
	Астра-814 Pro	1	120	120	120	120
	Астра-РИ-М	3	80	80	240	240
	Астра-863 исп. А	1	80	150	80	150
	Астра-А ИЛС	10	5	5	50	50
	РИП-24 исп. 06	1	70	70	70	70
					700	770

Battery capacity calculation:
Standby time 24 hours – $E_{бат.д}$ = 0,70Ax24h/0,8 =21,0Axh
Operating time in alarm mode 1 hour – $E_{бат.тр}$ = 0,77Ax1h/0,8 =1,0Axh
Required battery capacity $E_{бат.}$= $E_{бат.д}$ + $E_{бат.тр}$ =21,0Axh+1,0Axh=22,0Axh
0.8 – safety factor (20% of the full discharge of the battery)
For the UPS7 power supply, we accept: redundant power supply РИП-24 исп. 06
Nominal output voltage – 24V
Output rated current – 4.0A
Storage battery 12V/26Axh – 2 pcs.

Designation on the project	Name current consumption equipment	Quantity, pcs.	Consumption current, mA		Total current consumption, mA	
			Standby mode	Alarm	Standby mode	Alarm
UPS3	Астра-812 Pro	1	120	120	120	120
	Астра-863 исп. Б	1	100	160	100	160
	Астра-РИ-М РР	1	100	100	100	100
	Астра-8131	1	20	70	20	70
	Астра-2331	1	100	200	100	200
	РИП-12 исп. 18	1	40	40	40	40
					480	690

Battery capacity calculation:
Standby time 24 hours – $E_{бат.д}$ = 0,48Ax24h/0,8 =14,4Axh
Operating time in alarm mode 3 hour – $E_{бат.тр}$ = 0,69Ax3h/0,8 =2,6Axh
Required battery capacity $E_{бат.}$= $E_{бат.д}$ + $E_{бат.тр}$ =14,4Axh+2,6Axh=17,0Axh
0.8 – safety factor (20% of the full discharge of the battery)
For the UPS3 power supply, we accept: redundant power supply РИП-12 исп. 18
Nominal output voltage – 12V
Output rated current – 3.0A
Storage battery 12V/17Axh – 1 pcs..

6. Cable lines

Cable lines FAS perform:
- interface line RS-485 – cable КИС-РВнг(А)-FRLS 2х2х0,64мм;
- power supply line 24V – cable КСРВнг(А)-FRLS 1х2х0,97мм;
- connecting lines – cable КСРВнг(А)-FRLS 4х0,5мм
- power supply line 220V – cable ВВГнг(А)-FRLS 3х1.5мм2.

Cable lines SAS perform:
- interface line RS-485 – cable КИС-РВнг(А)-FRLS 2х2х0,64мм;
- power supply line 12V – cable КСРВнг(А)-FRLS 1х2х0,97мм;
- connecting lines – cable КСВВнг(А)-LS 4х0,5мм;
- power lines 220V – cable ВВГнг(А)-LS 3х1.5мм2.

The cable lines should be laid openly on brackets behind the false ceiling, downsides to the equipment in the cable duct and in the flexible corrugated pipe.

7. Configuring

Configure the FAS using a personal computer with preinstalled software ПКМ Астра Pro версии 5.5. If necessary, update the Астра-8945 Pro device to version 5.5. For the Астра-РИ-М РР radio expander, use the software sysRR5.0. Connect a personal computer to the Астра-8945 Pro device using the Астра-984 interface unit. Perform the configuration in accordance with the instructions of the user of the software ПКМ Астра Pro, the Астра-8945 Pro device, this project documentation and in agreement with the owner.

Configure the SAS using a personal computer with preinstalled software ПКМ Астра Pro версии 5.3. If necessary, update the Астра-812 Pro device to version 5.3. Connect a personal computer to the Астра-812 Pro device using the Астра-984 interface unit. Perform the configuration in accordance with the instructions of the user of the software ПКМ Астра Pro, the Астра-812 Pro device, this project documentation and in agreement with the owner.

8. Symbols adopted in the project

Обозначение	Наименование
ARKx	Fire alarm control panel Астра-8945 Pro
ARKx	Fire alarm control panel Астра-812 Pro
RMCx	Monitoring and control panel Астра-814 Pro
DUKx	Display unit Астра-863 исп. А (Also Астра-863 исп. Б)
RSx	Radio expander Астра-РИ-М РР (System mode)
RRx	Radio expander Астра-РИ-М РР (Repeater mode)
UPSx	Redundant power supply РИП-24 исп. 06 (Also РИП-12 исп. 18)
IS	Communication line isolator Астра-А ИЛС
xBTHy	Radio cannel smoke fire detector Астра-412 исп. РК
xBTHy	Also, installation behind a false ceiling
xBTMy	Radio cannel manual fire detector Астра-4511
xBIALSy	Radio cannel combined security and fire siren Астра-2331
xSCy	Modular contactor VS425-04
СРК	Air conditioner coordinator СРК-DM
xRCy	Radio cannel control panel Астра-8131
xBGLy	Radio cannel surround security detector Астра-5131 исп. А
xBGTy	Radio cannel surface sound security detector Астра-6131
xBGBy	Radio cannel magnetic contact security detector Астра-3321
xBGMy	Radio cannel electrical contact security detector Астра-3221
RTM	Reader Touch Memory Считыватель-2
ELD	Emergency lighting lamp ДПА-2104
ЩСБ	Power security system shield
ВРУ	Input distribution device
———	Cable line

Примечания: x – number (address) of the device, radio expander, control panel, unit, power supply;
y – number (address) of the detector, annunciator, control panel, control output.

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Взам. подл. №

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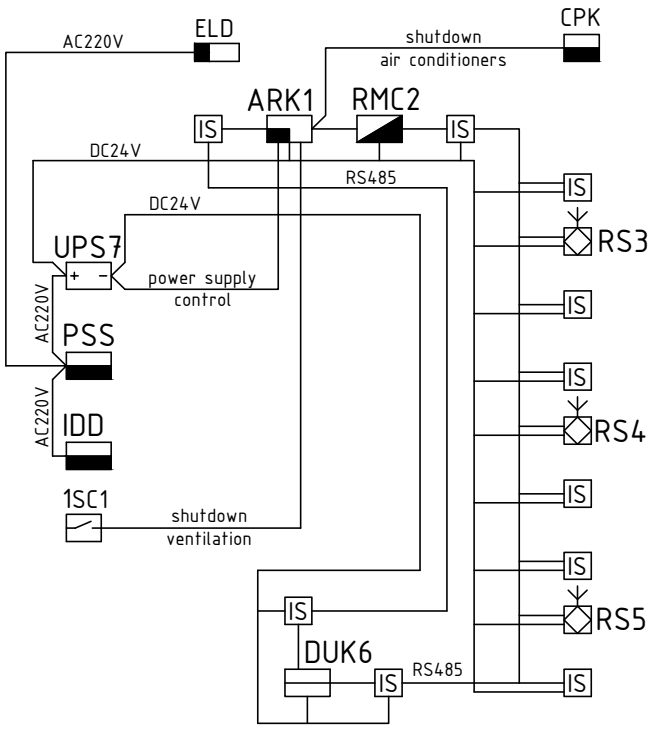
Инв. № подл.

Chang	Party	Sheet	№ doc.	Signature	Date	310/2021-FS1.EN	Sheet 8

A4 format

Fire alarm system

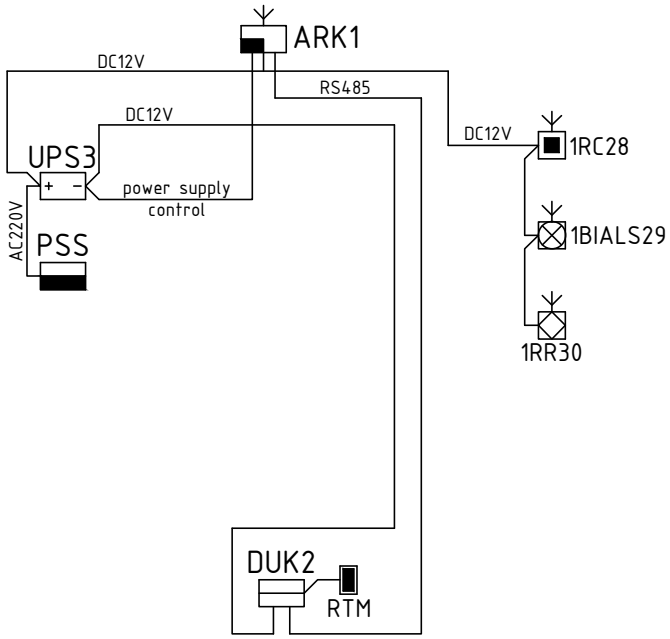


3BTH1 . . . 3BTH10 — Астра-412 – 10 pcs.

4BTM1 . . . 4BTM4 — Астра-4511 – 4 pcs.

5BIALS1 . . . 5BIALS6 — Астра-2331 – 6 pcs.

Security alarm system



1BGL1 . . . 1BGL5 — Астра-5131 исп. А – 5 pcs.

1BGT6 . . . 1BGT10 — Астра-6131 – 5 pcs.

1BGB11 . . . 1BGB26 — Астра-3321 – 16 pcs.

1BGM27 — Астра-3221 – 1 pc.

Согласовано

Взам. подл. №

Подпись и дата

Инв. № подл.

Chang	Party	Sheet	№ doc.	Signature	Date
Developed		Sinelnikov			03.21.
CPE		Sinelnikov			03.21.
Reg.control		Ivanov			03.21.

310/2021-FS1

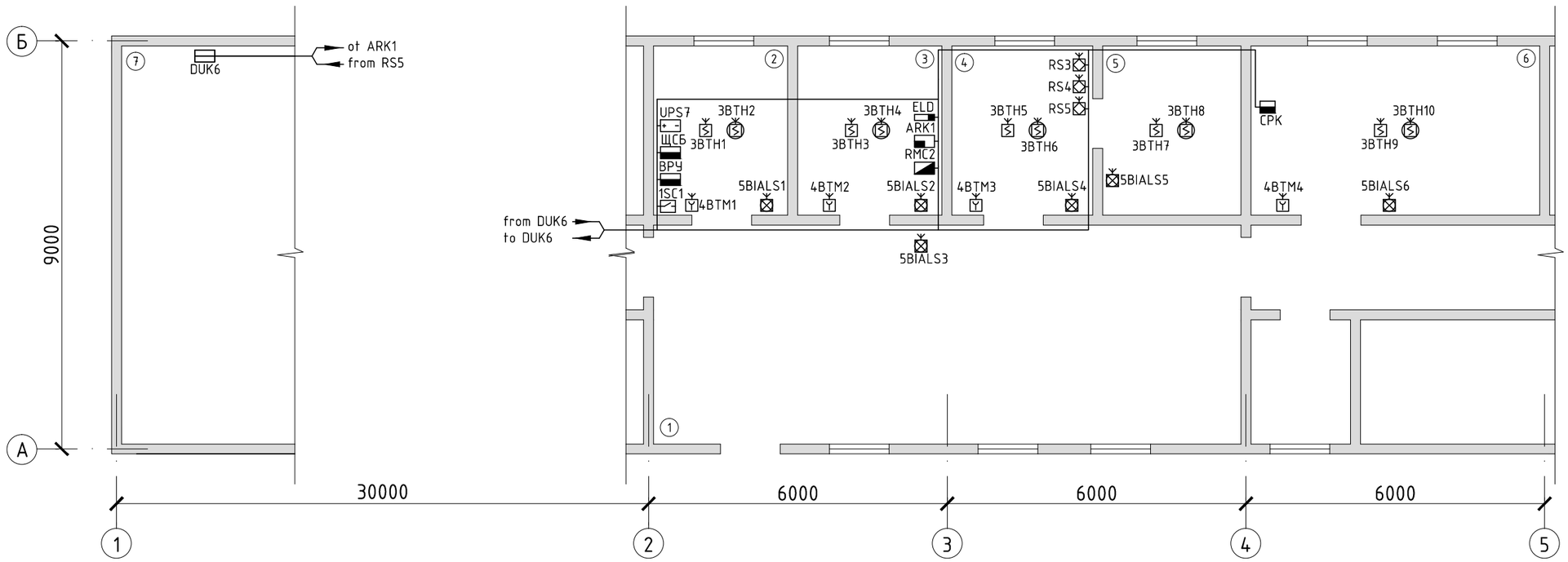
Radionuclide IMS station RN60

Fire alarm system. Security alarm system	Stage	Sheet	Sheets
	D	1	5
Structural scheme			

A4 format

Explication of premises

№	Name	Area, m2	Category premises for explosion and fire hazard
1	Hall	-	
2	Storeroom spare parts	9,2	Д
3	Equipment room	10,1	Д
4	Laboratory	9,5	Д
5	Detector	9,8	Д
6	RBG	19,3	В3
7	Duty shift room	-	



Installation instructions:

1. Астра-8945 Pro device and Астра-814 Pro control panel together with Астра-А ИЛС insulators, ARK1 and RMC2 markings, should be installed on a metal mounting panel 610x460mm thick. 1mm.
2. Display unit Астра-863 isp. And together with insulators Астра-А ИЛС, marking DUK6, install on a metal mounting panel 450x450mm thick. 1mm.
3. Communication line insulators Astra-A ILS are not shown conventionally, see sheet 1.
4. Lay the cable lines openly on the brackets behind the false ceiling, lower the cables to the equipment in the cable channel 25x16mm.
5. Passing cables through walls, partitions and ceilings should be made in a smooth PVC pipe d20mm. Seal the passages with non-combustible material.

Chang	Party	Sheet	№ doc.	Signature	Date
Developed		Sinelnikov			03.21.
CPE		Sinelnikov			03.21.
Reg.control		Ivanov			03.21.

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Radionuclide IMS station RN60

Fire alarm system	Stage	Sheet	Sheets
	D	2	

Layout of equipment and cable routes

Согласовано

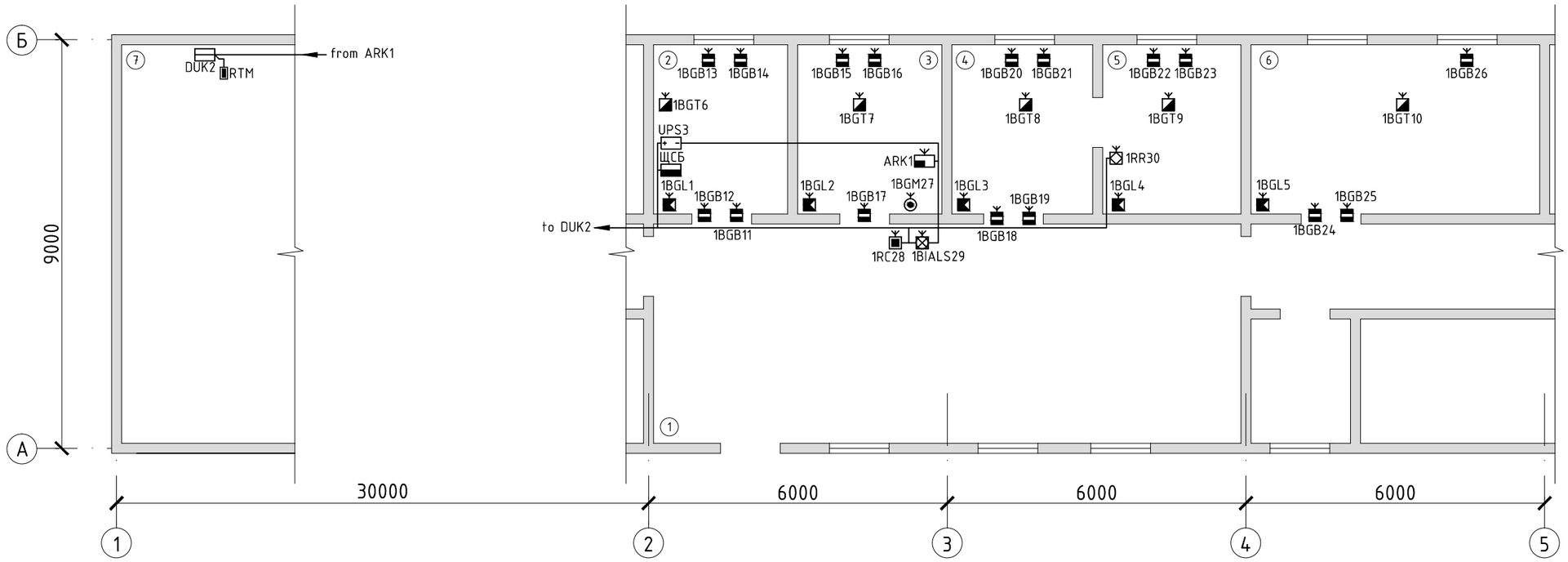
Взам. подл. №

Подпись и дата

Инв. № подл.

Explication of premises

№	Name	Area, m2	Category premises for explosion and fire hazard
1	Hall	-	
2	Storeroom spare parts	9,2	Д
3	Equipment room	10,1	Д
4	Laboratory	9,5	Д
5	Detector	9,8	Д
6	RBG	19,3	В3
7	Duty shift room	-	



Installation instructions:
1. Install the Астра-812 Pro device, ARK1 marking on a metal mounting plate 400x350mm thick. 1mm.
2. Display unit Астра-863 isp. B with reader, DUK2 and RTM marking, mount on a metal mounting panel 450x450mm thick. 1mm.
3. Position the Астра-6131 detector, marking 1BGT4 so that the detection zone blocks the window and the door.
4. Lay the cable lines openly on the brackets behind the false ceiling, lower the cables to the equipment in the cable channel 25x16mm.
5. Passing cables through walls, partitions and ceilings should be made in a smooth PVC pipe d20mm. Seal the passages with non-combustible material.

Chang	Party	Sheet	№ doc.	Signature	Date
Developed		Sinelnikov			03.21.
CPE		Sinelnikov			03.21.
Reg.control		Ivanov			03.21.

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Radionuclide IMS station RN60

Security alarm system

Stage	Sheet	Sheets
D	3	

Layout of equipment and cable routes

A3 format S 1:100

Согласовано

Взам. подл. №

Подпись и дата

Инв. № подл.

Listofworkingdrawingsofthemainset

Sheet	Name	Note
4	Generaldata	
5	Equipmentconnectiondiagram	

Listofreferenceandattacheddocuments

Designations	Name	Note
	Attacheddocuments	
3102021-FS1.CR	Cablerecord	on2sheets
3102021-FS1.SE	Specificationofequipment,productsand	on5sheets
	materials	
3102021-FS1.SP	Sparepartskitlist	on1sheet
3102021-FS1. CA	Constructionassignmenttothecustomer	on1sheet

GENERAL INSTRUCTIONS

1. General data

This section of the working documentation provides for the creation of fire alarm systems (hereinafter FAS) and burglar alarms (hereinafter SAS) in the building of the MSM RN60 radionuclide station, located at the address: Kamchatka Territory, Petropavlovsk-Kamchatsky, st. Shchorsa, 31.

2. Installation instructions

The installation of technical equipment, commissioning, testing and commissioning of the FAS and SAS shall be carried out in accordance with the requirements РД 78.145-93, СП 3.13130.2009, СП 5.13130.2009, СП 484.131500.2020, СП 6.13130.2013, СП 76.13330.2016, СТО НОСТРОЙ 2.15.10-2011 and technical documentation for the equipment used.

Upon completion of installation, commissioning, testing and commissioning of the FAS and SAS, dismantle the existing FAS and SAS equipment.

When laying cable lines, follow the requirements of СП 6.13130.2013, СП 76.13330.2016, СП 256.1325800.2016 and ПУЭ.

Installation and commissioning of technical means of the FAS must be carried out by a specialized organization that has an appropriate permit (license). Deviations from design documentation during installation are not allowed without agreement with the design organization - the project developer.

The maintenance, technical maintenance and scheduled preventive maintenance of the FAS and the SAS shall be carried out in accordance with the requirements of ГОСТ Р 54101-2010.

3. Safety requirements

To work on installation and commissioning of technical means of FAS and SAS are allowed persons who have undergone safety instructions when working with electrical installations up to 1000V, who have a qualification group of at least 3 for the right to work in electrical installations with a voltage of up to 1000V and who have studied this project and technical documentation for the equipment that is part of the FAS and SAS.

When performing installation and commissioning of technical means of FAS and SAS, it is necessary to comply with the requirements of СНиП 12-03-2001, the Rules for labor protection during the operation of electrical installations, the Rules for the fire regime in the Russian Federation and technical documentation for the equipment used.

4. Environmental protection

This section of the working documentation was developed in compliance with sanitary standards and using equipment and materials that do not emit harmful substances into the environment and do not produce noise exceeding the permissible standards.

Equipment and materials offered for use in design documentation have certificates of conformity of the Russian Federation.

5. Normative and referenced documents

1. Federal Law of the Russian Federation of July 22, 2008 N 123-ФЗ "Technical regulations on fire safety requirements."
2. Decree of the Government of the Russian Federation of February 16, 2008 N 87 "On the composition of sections of project documentation and requirements for their content."
3. Decree of the Government of the Russian Federation of September 16, 2020 N 1479 "Rules of the fire regime in the Russian Federation."
4. ГОСТ Р 21.1101-2013 Basic requirements for design and working documentation.
5. ГОСТ 31565-2012 Cable products. Fire safety requirements.
6. ГОСТ Р 54101-2010 Automation and control systems. Security means and systems. Maintenance and running repairs.
7. СНиП 12-03-2001 Labor safety in construction.
8. СП 3.13130.2009 Fire protection systems. The system of warning and management of evacuation of people in case of fire. Fire safety requirements.
9. СП 5.13130.2009 Fire protection systems. Automatic fire alarm and extinguishing installations. Norms and rules of design.
10. СП 484.131500.2020 Fire protection systems. Fire alarm systems and automation of fire protection systems Norms and rules of design.
11. СП 6.13130.2013 Fire protection systems. Electrical equipment. Fire safety requirements.
12. СП 51.13330.2011 Noise protection.
13. СП 76.13330.2016 Electrical devices.
14. СП 256.1325800.2016 Electrical installations of residential and public buildings. Design and installation rules.
15. ПУЭ edition 7.
16. РД 78.145-93 Systems and complexes of security, fire and security and fire alarm systems. Rules for the production and acceptance of works.
17. Р 083-2019 Norms and rules for the design of security systems at facilities guarded (taken under protection) by non-departmental security units.
18. СТО НОСТРОЙ 2.15.10-2011 Security and fire alarm systems, warning and evacuation control systems, access control and management systems, security television systems. Installation, commissioning and commissioning.

Chang	Party	Sheet	№ doc.	Signature	Date
Developed		Sinelnikov			03.21.
CPE		Sinelnikov			03.21.
Reg.control		Ivanov			03.21.

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RadionuclideIMSstationRN60

Firealarmsystem.
Securityalarmsystem

Стадия	Лист	Листов
W	4	

Generaldata

Согласовано

Взам. подл. №

Подпись и дата

Инв. № подл.

A3format

ELD
ДПА-2104
L
N
AC220V
M1
UPS7
РИП-24 исп. 06
XT2
XT1
24V
K1
K2
K3
R1
XP3
AC220V
R1=3,9 кОм
IS
Астра-А ИЛС
L1
L2
A
B
+
−
ARK1
Астра-8945 Pro
Цепь
U1
GND
RELAY1
Zone1
Zone2
B1
B2
B3
B4
485 A
485 B
OC1
OC2
OC3
RMC2
Астра-814 Pro
485A
485B
RS3
Астра-РИ-М РР
СРК
СРК-DM
48
49
1SC1
VS425
A1
A2
11
21
31
41
12
22
32
42
AC380V
shut off ventilation
PSS
AB 1A B
AB 3A B
AB 3A B
AB 10A B
PH-111M
neutral
ground
PE
M1
AC220V
AB10A from IDD
M2
DUK6
Астра-863 исп. А
RS5
RS4
K4
K5
K6
1RC28
Астра-8131
1BIALS29
Астра-2331
1RS30
RTM
Считыватель-2
СЧ
Общий
Инд
white
black
red
DUK2
Астра-863 исп. Б
+TM
-TM
Out
UPS3
РИП-12 исп. 18
XP1
XT1
12V
OK
ARK1
Астра-812 Pro

Chang	Party	Sheet	№ doc.	Signature	Date
Developed		Sinelnikov			03.21.
CPE		Sinelnikov			03.21.
Reg.control		Ivanov			03.21.

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Radionuclide IMS station RN60

Fire alarm system.
Security alarm system

Stage	Sheet	Sheets
W	5	

Equipment connection diagram

Согласовано

Взам. подл. №

Подпись и дата

Инв. № подл.

A3 format

Designation cable	Cable route		Cable route section	Cable		Cable laying, m				Total length cable, m	Note
	Beginning	Ending		Cable type	Number, size of cable cores	open	in tray, box	in the pipe	on the rope		
Fire alarm system											
K1	ARK1	RMC2	equipment room	КИС-Внг(А)-FRLS	2х2х0,64	–	1	–	–	1	
K1	RMC2-IS	IS-RS3	equipment room/	КИС-Внг(А)-FRLS	2х2х0,64	9	2	1	–	12	
			/laboratory								
K1	RS3-IS	IS-RS4	laboratory	КИС-Внг(А)-FRLS	2х2х0,64	–	1	–	–	1	
K1	RS4-IS	IS-RS5	equipment room	КИС-Внг(А)-FRLS	2х2х0,64	–	1	–	–	1	
K1	RS5-IS	IS-DUK6	laboratory/	КИС-Внг(А)-FRLS	2х2х0,64	46	3	1	–	50	
			/duty shift room								
K1	DUK6-IS	IS-ARK1	laboratory/	КИС-Внг(А)-FRLS	2х2х0,64	44	5	1	–	50	
			/duty shift room								
			Total:	КИС-Внг(А)-FRLS	2х2х0,64	99	13	3	–	115	
K2	UPS7	IS-ARK1	storeroom spare parts/	КСРВнг(А)-FRLS	1х2х0,97	12	2	1	–	15	
			/equipment room								
K2	ARK1	RMC2	equipment room	КСРВнг(А)-FRLS	1х2х0,97	–	1	–	–	1	
K2	RMC2-IS	IS-RS3	equipment room	КСРВнг(А)-FRLS	1х2х0,97	10	2	1	–	13	
			/equipment room								
K2	RS3-IS	IS-RS4	equipment room	КСРВнг(А)-FRLS	1х2х0,97	–	2	–	–	2	
K2	RS4-IS	IS-RS5	equipment room	КСРВнг(А)-FRLS	1х2х0,97	–	2	–	–	2	
K2	UPS7	IS-DUK6	storeroom spare parts/	КСРВнг(А)-FRLS	1х2х0,97	40	5	1	–	46	
			/duty shift room								
K2	DUK6	IS	duty shift room	КСРВнг(А)-FRLS	1х2х0,97	–	1	–	–	1	
K2	ARK1	1SC1	equipment room/	КСРВнг(А)-FRLS	1х2х0,97	11	2	2	–	15	
			/storeroom spare parts								
			Total:	КСРВнг(А)-FRLS	1х2х0,97	73	17	5	–	95	
K3	ARK1	UPS7	equipment room/	КСРВнг(А)-FRLS	4х0,5	11	2	1	–	14	
			/storeroom spare parts								
K3	ARK1	CPK	equipment room/RBG	КСРВнг(А)-FRLS	4х0,5	14	2	–	–	16	
			Total:	КСРВнг(А)-FRLS	4х0,5	25	4	1	–	30	

Согласовано

Взам. подл. №

Подпись и дата

Инв. № подл.

Chang	Party	Sheet	№ doc.	Signature	Date
Developed		Sinelnikov			03.21
CPE		Sinelnikov			03.21
Reg.control		Ivanov			03.21

310/2021-FS1.CR

Cable record

Stage	Sheet	Sheets
W	1	2

A4 format

Designation cable	Cable route		Cable route section	Cable		Cable laying, m				Total length cable, m	Note
	Beginning	Ending		Cable type	Number, size of cable cores	open	in tray, box	in the pipe	on the rope		
M1	IDD	PSS	storeroom spare parts	ВВГнг(А)-FRLS	3х1,5	–	2	2	–	4	
M1	PSS	UPS7	storeroom spare parts	ВВГнг(А)-FRLS	3х1,5	–	2	–	–	3	
M1	PSS	ELD	storeroom spare parts/	ВВГнг(А)-FRLS	3х1,5	11	2	1	–	14	
			/equipment room								
			Total:	ВВГнг(А)-FRLS	3х1,5	11	6		–	20	
								3			
Security alarm system											
K4	ARK1	DUK2	equipment room/	КИС-Внг(А)-LS	2х2х0,60	44	5	1	–	50	
			/duty shift room								
			Total:	КИС-Внг(А)-LS		44	5	1	–	50	
K5	UPS3	ARK1	storeroom spare parts/	КСВВнг(А)-LS	1х2х0,97	8	2	1	–	11	
			/equipment room								
K5	ARK1	1RC13	equipment room/hall	КСВВнг(А)-LS	1х2х0,97	4	2	1	–	7	
K5	1RC13	1BIALS14	hall	КСВВнг(А)-LS	1х2х0,97	–	2	–	–	2	
K5	1BIALS14	1RR24	hall/detector	КСВВнг(А)-LS	1х2х0,97	8	2	–	–	10	
			Total:	КСВВнг(А)-LS	1х2х0,97	20	8	2	–	30	
K6	UPS3	ARK1	storeroom spare parts/	КСВВнг(А)-LS	4х0,5	8	2	1	–	11	
			/equipment room								
K6	DUK2	Считыватель-2	duty shift room	КСВВнг(А)-LS	4х0,5	–	1	–	–	1	
			Total:	КСВВнг(А)-LS	4х0,5	8	3	1	–	12	
M2	PSS	UPS3	storeroom spare parts	ВВГнг(А)-LS	3х1,5	–	3	–	–	3	
			Total:	ВВГнг(А)-LS	3х1,5	–	3	–	–	3	

Согласовано

Взам. подл. №

Подпись и дата

Инв. № подл.

Chang	Party	Sheet	№ doc.	Signature	Date

310/2021-FS1.CR

Sheet 2

Формат А4

Symbol	Name and specifications	Type, brand, designation of the document, questionnaire	Product code	Manufacturer	Unit of measu-rement	Qty	Weight 1 unit, kg	Note
	Fire alarm system							
	Equipment							
ARK	1. Fire alarm control panel	Астра-8945 Pro		ТЭКО	pcs.	1		
	2. Communication module	Астра-GSM (ПАК Астра)		ТЭКО	pcs.	1		
	3. Interface module	Астра-RS-485		ТЭКО	pcs.	1		
RMC	4. Monitoring and control panel	Астра-814 Pro		ТЭКО	pcs.	1		
DUK	5. Display unit	Астра-863 исп. А		ТЭКО	pcs.	1		
RS	6. Radio expander	Астра-РИ-М РР		ТЭКО	pcs.	3		
UPS	7. Redundant power supply	РИП-24 исп. 06		Болид	pcs.	1		
IS	8. Communication line isolator	Астра-А ИЛС		ТЭКО	pcs.	10		
BTH	9. Optical-electronic smoke detector	Астра-421 исп. РК		ТЭКО	pcs.	10		
	radio channel							
BTM	10. Manual radio channel fire detector	Астра-4511		ТЭКО	pcs.	4		
BIALS	11. Combined fire alarm radio channel	Астра-2331		ТЭКО	pcs.	6		
SC	12. Modular contactor, 440V/25 A, 4NC, AC/DC 24V	VS425-04		ELKO EP	pcs.	1		

Согласовано

Взам. подл. №

Подпись и дата

Инв. № подл.

Chang	Party	Sheet	№ doc.	Signature	Date
Developed		Sinelnikov			03.21
CPE		Sinelnikov			03.21
Reg.control		Ivanov			
					03.21

310/2021-FS1.SE

Specification of equipment, products and materials

Stage	Sheet	Sheets
W	1	5

A4 format

Symbol	Name and specifications	Type, brand, designation of the document, questionnaire	Product code	Manufacturer	Unit of measu-rement	Qty	Weight 1 unit, kg	Note
	Materials and installation products							
	1. Interface box	Астра-984		ТЭКО	pcs.	1		
	2. Storage battery, 12V/26 Axh	DTM1226		Delta	pcs.	2		
	3. Emergency lamp	ДПА-2104		IEK	pcs.	1		
	4. Modular box, 8 mod., wall	ЩРН-П-8		IEK	pcs.	1		
	5. Voltage relay AC 220V/16A	РН-111М		Новатек Электро	pcs.	1		
	6. Circuit breaker, 10A	ВА47-29-1Р 10А В		IEK	pcs.	2		
	7. Circuit breaker, 3A	ВА47-29-1Р 3А В		IEK	pcs.	1		
	8. Circuit breaker, 1A	ВА47-29-1Р 1А В		IEK	pcs.	1		
	9. Bus N on DIN insulator	ШНИ 6Х9-8		IEK	pcs.	1		
	10. Bus PEN on DIN insulator	ШНИ 6Х9-8		IEK	pcs.	1		
	11. Connecting bus, PIN, 8, 1P, 63A			IEK	pcs.	1		
	12. Cable channel, Elecor, 25x16mm			IEK	m	20		
	13. Fittings for cable channel, Elecor, 25x16mm			IEK	pcs.	6		
	14. Corrugated PVC pipe, d = 16mm, gray			IEK	m	4		
	15. Single-leg bracket, galvanized steel	СМО 8-9		Fortisflex	pack	11		pack 100 pcs.
	16. Single-leg bracket, galvanized steel	СМО 16-17		Fortisflex	pack	0,2		pack 100 pcs.

Согласовано

Взам. подл. №

Подпись и дата

Инв. № подл.

Chang	Party	Sheet	№ doc.	Signature	Date

310/2021-FS1.SE

Sheet 2

A4 format

Symbol	Name and specifications	Type, brand, designation of the document, questionnaire	Product code	Manufacturer	Unit of measu-rement	Qty	Weight 1 unit, kg	Note
	17. Mounting metal sheet 610x460mm, thick. 1mm				pcs.	1		
	18. Mounting metal sheet 450x450mm, thick. 1mm				pcs.	1		
	19. Smooth PVC pipe, d = 20mm, gray, L = 2m			IEK	pcs.	4		
	20. Fire-resistant assembly foam, cylinder gun	SOUDAFOAM FR		SOUDAL	pcs.	1		
	Cable production							
K1	1. Cable RS485, cross-section 2x2x0.64mm	КИС-РВнг(А)-FRLS		Паритет	m	115		
K2	2. Cable for signaling systems, cross-section 1x2x0.97mm	КСРВнг(А)-FRLS		Паритет	m	95		
K3	3. Cable for signaling systems, cross-section 4 x0,5мм	КСРВнг(А)-FRLS		Паритет	m	30		
M1	4. Power cable, cross-section 3x1.5mm2	ВВГнг(А)-FRLS		Спецкабель	m	20		

Согласовано

Взам. подл. №

Подпись и дата

Инв. № подл.

Chang	Party	Sheet	№ doc.	Signature	Date

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Sheet 3

A4 format

Symbol	Name and specifications	Type, brand, designation of the document, questionnaire	Product code	Manufacturer	Unit of measu-rement	Qty	Weight 1 unit, kg	Note
	Security alarm system							
	Equipment							
ARK	1. Fire alarm control panel	Астра-812 Pro		ТЭКО	pcs.	1		
	2. Communication module	Астра-GSM (ПАК Астра)		ТЭКО	pcs.	1		
DUK	3. Display unit	Астра-863 исп. Б		ТЭКО	pcs.	1		
	4. Reader Touch Memory	Считыватель-2		Болид	pcs.	1		
RR	5. Radio expander	Астра-РИ-М РР		ТЭКО	pcs.	1		
RC	6. Radio channel control panel	Астра-8131		ТЭКО	pcs.	1		
UPS	7. Redundant power supply	РИП-12 исп. 18		Болид	pcs.	1		
BGL	8. Surround security detector optoelectronic passive	Астра-5131 исп. А		ТЭКО	pcs.	5		
	radio channel							
BGT	9. Surface security sound detector radio channel	Астра-6131		ТЭКО	pcs.	5		
BGB	10. The detector is a security point magnetic contact	Астра-3321		ТЭКО	pcs.	16		
	radio channel							
BGM	11. Electrical contact point security detector	Астра-3221		ТЭКО	pcs.	1		
	radio channel							
BIALS	12. Combined security alarm radio channel	Астра-2331		ТЭКО	pcs.	1		
	Materials and installation products							
	1. Storage battery, 12V/17Axh	DTM1217		Delta	pcs.	1		

Согласовано

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Sheet 4

A4 format

Symbol	Name and specifications	Type, brand, designation of the document, questionnaire	Product code	Manufacturer	Unit of measu-rement	Qty	Weight 1 unit, kg	Note
	2. Key Touch Memory	DS-1990A		Dallas	pcs.	4		
	3. Circuit breaker, 3A	BA47-29-1P 3A B		IEK	pcs.	1		
	4. Cable channel, Elecor, 25x16mm			IEK	m	12		
	5. Fittings for cable channel, Elecor, 25x16mm			IEK	pcs.	6		
	6. Single-leg bracket, galvanized steel	CMO 8-9		Fortisflex	pack	4		pack 100 pcs.
	7. Mounting metal sheet 450x450mm, thick. 1mm				pcs.	1		
	8. Mounting metal sheet 400x350mm, thick. 1mm				pcs.	1		
	9. Smooth PVC pipe, d = 20mm, gray, L = 2m			IEK	pcs.	2		
	10. Fire-resistant assembly foam, cylinder gun	SOUDAFOAM FR		SOUDAL	pcs.	1		
	Cable production							
K4	1. Cable RS485, cross-section 2x2x0.60mm	КИС-Внг(А)-LS		Паритет	m	50		
K5	2. Cable for signaling systems, cross-section 1x2x0.97mm	КСВВнг(А)-LS		Паритет	m	30		
K6	3. Cable for signaling systems, cross-section 4x0.5mm	КСВВнг(А)-LS		Паритет	m	12		
M2	4. Power cable, cross-section 3x1.5mm2	ВВГнг(А)-LS		Спецкабель	m	3		

Согласовано

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Sheet 5

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Designation spare parts	Code product	Spare part name	A place stacking	Applicability	Quantity in the product, pcs.	Quantity in a set, pcs.	Note
		Fire alarm system					
IS	26.30.50.129	1. Communication line insulator Астра-А ИЛС	-	-	2	-	-
BTH	26.30.50.121	2. Optical-electronic smoke detector radio channel Астра-421 исп. РК	-	-	2	-	-
BTM	26.30.50.121	3. Manual radio channel fire detector Астра-4511	-	-	1	-	-
BIALS	26.30.50.123	4. Combined radio channel fire alarm Астра-2331	-	-	1	-	-
		Security alarm system					
BGL	26.30.50.111	1. Surround security detector optoelectronic passive radio channel Астра-5131 исп. А	-	-	1	-	-
BGT	26.30.50.111	2. Surface security sound detector radio channel Астра-6131	-	-	1	-	-
BGB	26.30.50.111	3. The detector is a security point magnetic contact radio channel Астра-3321	-	-	2	-	-
BGM	26.30.50.111	4. Electrical contact point security detector radio channel Астра-3221	-	-	1	-	-
BIALS	26.30.50.114	5. Combined security alarm radio channel Астра-2331	-	-	1	-	-

Согласовано

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Chang	Party	Sheet	№ doc.	Signature	Date
Developed		Sinelnikov			03.21
CPE		Sinelnikov			03.21
Reg.control		Ivanov			03.21

310/2021-FS1.SP

Spare parts kit list

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A4 format

Construction assignment to the customer

1. Assignment for power supply

FAS and SAS technical means belong to category I in terms of power supply reliability.

Power supply shall be carried out from the input distribution device of the Object (hereinafter referred tc as the IDD) from a single-phase industrial AC network with a rated voltage of 220V and a frequency of 50Hz with voltage deviations from -15% to + 10% and a frequency of + 1% of the rated value.

To organize the power supply of the technical means of the FAS and SAS, install a power security shielc (hereinafter referred to as the PSS) in the spare parts store. For PSS use modular box ЩРН-П-8. Install a voltage relay РН-111М in the PSS, an input circuit breaker ВА47-29 1Р/10А, two ВА47-29 1Р/3А circuit breakers and a ВА47-29 1Р/1А circuit breaker.

Connect the redundant power supply РИП-24 исп. 06 and a redundant power supply РИП-12 исп. 18 to the automatic switches ВА47-29 1Р/3А. Connect the ДПА-2104 emergency lighting lamp to the ВА47-29 1Р/1А circuit breaker.

The total installed capacity of electrical consumers is 330 VA, including:

- redundant power supply РИП-24 исп. 06 - 225 VA;
- redundant power supply РИП-12 исп. 18 - 100 VA;
- emergency lighting lamp ДПА-2104 - 5 VA.

The power supply of the PSS should be provided from the IDD with the installation of the ВА47-29 1Р/10А circuit breaker.

The cable power supply lines should be made with ВВнг(А)-FRLS 3х1,5мм2 and ВВГнг(А)-LS 3х1,5мм2 cables. Lay cable lines in a cable channel and in a flexible corrugated pipe.

Protective grounding (grounding) must be performed in accordance with the requirements of ПУЭ-7 and СП 76.13330.2016.

2. Assignment on the organization of the notification transmission system

For the automatic transmission of voice messages and notifications in the SMS format when the Fault, Attention, Fire and Alarm signals are generated to the phone of the responsible person of the economic agency, without the participation of the facility personnel, the Астра-GSM (ПАК Астра) switching module installec in the Астра-8945 and Астра-812 Pro devices is used.

The customer needs to purchase two SIM-cards from different mobile operators for each device, one SIM-card is the main one, the second SIM-card is a reserve one and give them to the installation and commissioning organization.

Согласовано

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Developed		Sinelnikov			03.21
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Reg.control		Ivanov			03.21

3102021-FS1.CA

Constructionassignmenttothe customer

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A4format

Explanatory note of estimate documentation

1. General Provisions

This section of the estimate documentation for the creation of a fire alarm system and a security alarm system at the IMS RN60 radionuclide station at the address: 683032, Kamchatskiy Krai, Petropavlovsk-Kamchatskiy, Shchorsa Str. 31. developed on the basis of design documentation 310/2021-FS1.

Determination of the cost of work was carried out in the federal estimate and regulatory framework of 2020 (ФСНБ-2020) by the base-index calculation method (ФЕР-2020), on the basis of methodological normative documents in accordance with the order of the Ministry of Construction of Russia № 421/пр dated 04.08.2020 "On approval of the Methodology for determining the estimated cost of construction, reconstruction, overhaul, demolition of capital construction, works to preserve cultural heritage (historical and cultural monuments) of the peoples of the Russian Federation on the territory of the Russian Federation."

2. The procedure for determining the estimated cost of work

The cost of construction and installation works in the estimate documentation was determined using collection № 67 (ФЕРр-2017) and collections No. 8, No. 10, No. 11 (ФЕРм) at the current price level as of the IV quarter of 2020 with a conversion factor K = 18.13 on the basis of the letter of the Ministry of Construction of Russia No. 54145-ИФ/09 dated 30.12.2020. (Appendix 1, Far Eastern Federal District, Kamchatka Krai, Other objects).

The cost of commissioning works in the estimate documentation was determined using the collection № 2 (ФЕРп) for commissioning at the current price level as of the IV quarter of 2020 with a conversion factor K = 53.02 based on the letter of the Ministry of Construction of Russia № 54145-ИФ/09 dated 30.12.2020 (Appendix 1, Far Eastern Federal District, Kamchatka Krai, Commissioning works), in addition, a reduction coefficient K = 0.32 was applied to the labor costs and wages of commissioning personnel.

Overhead costs are determined as a percentage of the amount of funds for wages of construction workers and machine operators in accordance with the "Methodological guidelines for determining the amount of overhead costs in construction carried out in the Far North and localities equated to them" (МДС 81-34.2004).

The estimated profit is determined as a percentage of the amount of funds for the remuneration of construction workers and machine operators in accordance with the "Methodological Guidelines for Determining the Estimated Profit in Construction" (МДС 81-25.2001), an additional reduction coefficient K = 0.9 is applied in accordance with the letter of the Federal Agency for construction and housing and communal services № АП-5536/06 dated 18.11.2004.

3. The procedure for determining the estimated cost of material resources

The cost of equipment not taken into account by the price tag of federal estimated prices for materials, products and structures used in construction (ФССЦ) was analyzed by the retail network, taking into account delivery to the Kamchatka Krai, Petropavlovsk-Kamchatsky: determined by reverse counting from current prices as of the IV quarter of 2020 with a conversion factor K = 4.51 based on the letter of the Ministry of Construction of Russia № 45484-ИФ/09 dated 12.11.2020. (Appendix 4, p. 30, By non-production facilities).

The cost of materials not included in the price tag of federal estimated prices for materials, products and structures used in construction (ФССЦ) was analyzed by the retail network, taking into account delivery to the Kamchatka Krai, Petropavlovsk-Kamchatsky: determined by reverse counting from current prices as of the IV quarter of 2020 with a conversion factor K = 18.13 based on the letter of the Ministry of Construction of Russia № 54145-ИФ/09 dated 12/30/2020. (Appendix 1, Far Eastern Federal District, Kamchatka Territory, Other objects).

The consolidated estimate of the construction cost was carried out using the program for drawing up the estimate documentation "ГРАНД-СМЕТА 2020".

Согласовано

Взам. подл. №

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Инв. № подл.

Chang	Party	Sheet	№ doc.	Signature	Date
Developed		Sinelnikov			03.21
CPE		Sinelnikov			03.21
Reg.control		Ivanov			03.21

3102021-ED1.EN

Explanatorynoteofestimate documentation

Stage	Sheet	Sheets
W		1

Customer: Comprehensive Nuclear-Tests-Ban Treaty Organization

(name of company)

"Approved" "____" _____ 2021

Consolidated estimated calculation in the amount 12 135,00 USD

(link to approval document)

CONSOLIDATED ESTIMATE OF THE COST OF CONSTRUCTION

for the creation of a fire alarm system and a security alarm system in the radionuclide station IMS RN60 at the address: Kamchatskiy Krai, Petropavlovsk-Kamchatskiy, Shchorsa, Str. 31

(name of the construction site (object being repaired)

Compiled in prices as of the IV quarter of 2020

№	Estimated numbers and estimates	Name of chapters, objects, works and costs	Estimated cost				Total estimated cost, thousand rubles
			construction (repair and construction) works	installation works	equipment, furniture and inventory	other costs	
1	2	3	4	5	6	7	8
		Chapter 2. Main construction objects					
1	Estimated calculation (local estimate calculation)	Creation of a fire alarm system and a security alarm system, (thousand rubles)	25,552	264,371	256,995	345,128	892,046
		Total for chapter 2 (thousand rubles)	25,552	264,371	256,995	345,128	892,046
2		TOTAL (thousand rubles)	25,552	264,371	256,995	345,128	892,046
3		TOTAL US dollars (at the rate of the Central Bank of the Russian Federation as of 15.03.2021, 1 USD=73,5081 RUB)	348,00	3 596,00	3 496,00	4 695,00	12 135,00

Head of the design organization S.V. Shevchenko

(signature, initials, surname)

Chief Project Engineer S.V. Sinelnikov

(signature, initials, surname)

Customer

(position, signature, initials, surname)

ATTACHMENT 2 TO TERMS OF REFERENCE

Certificate No. 10973 dated May 25, 2015

Copy 1

Copies 2

Comprehensive Nuclear-Tests-Ban Treaty Organization

The Central Recording Fasility of IMS stations PS36/IS44

DESIGN and WORKING DOCUMENTATION

Section 9 "Measures to ensure fire safety"
Part 1 "Fire alarm system. Automatic fire extinguishing system. Security alarm system"

311/2021-FS1

Volume 1

Изм.	№ док.	Подпись	Дата

2021

ООО "Sigma-K" (Limited Liability Company)

Certificate No. 10973 dated May 25, 2015

Comprehensive Nuclear-Tests-Ban Treaty Organization

The Central Recording Fasility of IMS stations PS36/IS44

DESIGN and WORKING DOCUMENTATION

Section 9 "Measures to ensure fire safety"
Part 1 "Fire alarm system. Automatic fire extinguishing system. Security alarm system"

311/2021-FS1

Volume 1

Взам. подл. №

Подпись и дата

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2021

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	Security alarm system	
311/2021-FS1-6	Layout of equipment and cable routes.	24
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Согласовано

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Developed		Sinelnikov			03.21
CPE		Sinelnikov			03.21
Reg.control		Ivanov			03.21

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Volume content

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Composition of design and working documentation

Volume number	Designation	Name	Note
1	311/2021-FS1	Section 9 "Measures to ensure fire safety"	
		Part 1 "Fire alarm system. Automatic fire	
		extinguishing system. Security alarm system"	

Согласовано

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Developed		Sinelnikov			03.21
CPE		Sinelnikov			03.21
Reg.control		Ivanov			03.21

311/2021-FS1.CD

Composition of design and working documentation

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Content

Design documentation was developed in accordance with the urban planning plan land plot, design assignment, town planning regulations, technical regulations, including those establishing requirements for ensuring the safe operation of buildings, structures, structures and the safe use of adjacent territories, and in compliance with technical conditions.

Согласовано

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Chang	Party	Sheet	№ doc.	Signature	Date
Director		Shevchenko			03.21
Developed		Sinelnikov			03.21
CPE		Sinelnikov			03.21
Reg.control		Ivanov			03.21

311/2021-FS1.EN

Explanatory note

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1. General data

This section of the design documentation was developed on the basis of term of reference "DEVELOPMENT OF DESIGN DOCUMENTATION FOR FIRE ALARM AND SAFEGUARDING SYSTEM AT IMS STATION PS36/IS44, PETROPAVLOVSK-KAMCHATSKYI, RUSSIAN FEDERATION" and provides for the creation of fire alarm system (hereinafter referred to as FAS), automatic fire exstinguishing system (hereinafter referred to as AFES) and security alarm system (hereinafter referred to as SAS) in the building of the central recording facility stations IMS PS36/IS44 (hereinafter referred to as the Object), located at the address: 684025, Kamchatskiy Krai, Elizovskiy Region, Nachiki.

2. Brief description of the Object

The Object is located in a 1-storey building. The supporting structures are metal, walls, partitions and the building covering made of Sandwich panels with fireproof insulation, the covering is gable, separated from the main premises by the Armstrong type suspended ceiling, the interior decoration is covered with gypsum cardboard, painting.

The Object building belongs to category I in terms of power supply reliability and is provided with an autonomous backup power supply from a diesel generator. Forced supply and exhaust ventilation. The fire resistance of the building is III. Functional fire hazard class of the facility – Ф5.1. The total protected area of the Facility is 508.3 m2.

The Object is equipped with FAS, AFES and SAS. The existing equipment of FAS, AFES and SAS is subject to dismantling - see table 1.

List of equipment to be dismantled

Table 1

№	Name of equipment and materials	Unit	Quantity
1	Fire alarm control panel Сигнал-20	pcs.	2
2	Monitoring and control panel С2000	pcs.	1
3	Fire alarm control panel С2000-АСПТ	pcs.	2
4	Control and launch unit С2000-КПБ	pcs.	2
5	Redundant power supply БИРП	pcs.	4
6	Smoke fire detector ИПД3.1	pcs.	52
7	Thermal fire detector ИП103-31-1М	pcs.	10
8	Manual fire detector ИПР	pcs.	4
9	Powder extinguishing module Буран-2,5	pcs.	8
10	Sound security detector Стекло	pcs.	12
11	Security magnetic contact detector ИО102-20	pcs.	10
12	Security magnetic contact detector ИО102-2	pcs.	26
13	Light and sound annunciator КОП	pcs.	6
14	Light annunciator Блик	pcs.	6

3. Applied equipment

3.1. The construction of the FAS is carried out on the basis of the equipment of the facility system of the wireless security and fire alarm system Астра-Zитадель, manufacturer ТЕКО.

The FAS includes the following equipment:

3.1.1. Control and reception devices:

- fire and security control panel Астра -8945 Pro with communication module Астра -GSM (ПАК Астра) and interface module Астра-RS-485;
- control panel Астра-814 Pro;
- display unit Астра-863 исп. А.

3.1.2. Expanders, routers:

- expander of alarm loops Астра -713;
- radio channel repeater router Астра-Z-8845.

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3.1.3. Isolators, actuators:
- communication line insulator Аспра-А ИЛС;
- modular contactor ELKO EP VS425-04.

3.1.4. Fire detectors and annunciators:
- optical-electronic radio channel fire detector Аспра-Z-4245;
- optical-electronic linear fire detector ИПДЛ-52СМД;
- maximum differential radio channel fire detector Аспра-Z-4345;
- manual radio channel fire detector Аспра-Z-4545;
- radio channel fire warning light Аспра-Z-2745.
- combined radio channel fire alarm Аспра-2345.

3.1.5. Power Sources:
- redundant power supply РИП-24 исп. 06;
- redundant power supply РИП-24 исп. 12;
- converter module МП 24/12В.

3.2. The construction of AFES is carried out on the basis of fire extinguishing control devices of the Orion integrated security system, manufacturer Болид.

The AFES includes the following equipment:

3.2.1. Control and reception devices:
- control panel С2000М;
- control unit for automatic fire extinguishing means С2000-АСПТ;
- fire extinguishing system indication unit С2000-ПТ.

3.2.2. Executive devices:
- control and starting unit С2000-КПБ;
- signal and starting unit С2000-СП1;
- repeater of interfaces С2000-ПИ;
- terminal device УО-4С исп. 02;
- switching device УК/ВК исп. 14.

3.2.3. Fire extinguishing modules:
- module of powder fire extinguishing Буран-8Н.

3.2.4. Fire detectors and annunciators:
- optical-electronic smoke fire detector ДИП-31;
- combined gas and heat fire detector ИП435-8/101-04-А1R СОнет;
- remote start device УДП513-3М;
- magnetic contact point detector ИО102-20 А2П В;
- combined fire alarm "Powder go away" КОП-25П(С);
- fire alarm light "Do not enter powder" КОП-25П;
- fire alarm light "Automation off" КОП-25П.

3.2.5. Power Sources:
- redundant power supply РИП-24 исп. 50;
- redundant power supply РИП-24 исп. 56;
- redundant power supply РИП-12 исп. 54.

3.3. The construction of the SAS is carried out on the basis of the equipment of the facility system of the wireless security and fire alarm system Аспра-РИ-М, manufacturer ТЕКО.

The SAS includes the following equipment:

3.3.1. Control and reception devices:
- fire and security control panel Аспра-812 Pro with communication module Аспра-GSM (ПАК Аспра);
- display unit Аспра-863 исп. Б with Touch Memory reader;
- radio channel control panel Аспра-8131.

3.2.2. Radio expanders:
- radio expander Аспра-РИ-М РР.

3.2.3. Security detectors and annunciators:
- security detector volumetric optoelectronic passive radio channel Аспра-5131 исп. А;
- security detector surface optical-electronic passive radio channel Аспра-5131 исп. Ш;
- security surface sound radio channel detector Аспра-6131;

- radio channel magnetic contact point security detector Астра-3321;
- radio channel electrical point security alarm Астра-3221;
- combined radio channel security siren Астра-2331.

3.2.4. Power Sources:

- redundant power supply РИП-12 исп. 01 with boxing Бокс-12 исп. 0;
- redundant power supply РИП-12 исп. 02.

4. Purpose and location of equipment

4.1. Technical means FAS are designed to detect a fire at an early stage and provide:

- control of the state of fire detectors and annunciators;
- control of the serviceability of communication lines with the detection of breakage and short circuit and control of the serviceability of technical means and the formation of the Malfunction signal;
- generation of Attention and Fire signals when smoke detectors are triggered;
- formation of a Fire signal when a manual fire detector is triggered;
- activation of light and sound annunciators when a Fire signal is generated;
- shutdown of the supply and exhaust ventilation and air conditioning system when the Fire signal is generated;
- control of fire alarm zones with display of their status on the Астра-863 исп. А;
- control of technical means of the FAS by means of the Астра-814 Pro remote control;
- registration and storage of information about all events in the non-volatile memory of the Астра-8945 Pro device;
- restricting access to control and programming functions;
- automatic transmission of voice messages and notifications in SMS format when the Malfunction, Attentior and Fire signals are generated to the phone of the responsible person of the owner.

The Астра-8945 Pro device is designed to monitor the status and control of radio devices via a radic channel in the operating frequency range of 2.4 / 2.48 GHz, to monitor the status and control of the SPS hardware connected to the RS485 ring interface using the Астра-RS-485 interface module, transmission of voice messages and notifications in the SMS format when forming the Malfunction, Attention and Fire signals to the phone of the responsible person of the owner through the communication module Астра-GSM (ПАК Астра). The Астра-814 Pro console, the Астра-863 исп. А and radio expanders Астра-РИ-М РР are connectec to the RS485 ring interface.

The Астра-814 Pro remote control is designed to monitor the status and control of technical means that are connected to the Astra-8945 Pro device.

Block Астра-863 исп. А is intended for light and sound indication of the state of the FAS sections

The Астра-713 alarm loop expander is designed to monitor the status of ИПДЛ-52СМД line fire detectors and receive a Fire signal from the AFES and transmit information to the Астра-8945 Pro device.

The Астра-Z-8845 repeater router is designed for relaying information about the state radio devices tc the Астра-8945 Pro device and for organizing the main and backup route for delivering information about the state of radio devices to the Астра-8945 Pro device.

The Астра-А ИЛС communication line isolator is designed to maintain the functionality of the RS485 ring interface in the event of a short circuit or a break in the communication line.

The VS425-04 contactor is designed to turn off the supply and exhaust ventilation system by opening the power supply line of the ventilation system.

The Астра-Z-4245 fire smoke detector is designed to detect a fire accompanied by the appearance of smoke and transmit Fault, Norm, Attention and Fire notifications to the Астра-8945 Pro device via the Астра-Z-8845 repeater router via a radio channel.

Linear smoke detector ИПДЛ-52СМД is designed to detect a fire accompanied by the appearance of smoke and transmit Fault, Norm, Attention and Fire notifications to the Астра-713 expander.

The Астра-Z-4345 thermal fire detector is designed to detect a fire when the threshold temperature and temperature rise rate are exceeded and to transmit Fault, Norm, Attention and Fire notifications to the Астра-8945 device via the Астра-Z-8845 repeater router via the radio channel.

The Астра-Z-4545 manual fire detector is designed to generate a Fire signal when you press the detector drive element and transmit Fault, Norm and Fire notifications to the Астра-8945 Pro device via the Астра-Z-8845 repeater-router via the radio channel.

The Астра-Z-2745 light fire annunciator is intended for light indication of evacuation exits when a Fire signal is generated.

Combined fire annunciator Астра-Z-2345 is designed for light and sound notification of people about a fire when a Fire signal is generated.

Power supplies РИП-24 исп. 06 and РИП-24 исп. 12 are intended for power supply of technical means of FAS with a voltage of 24V. The МП 24 / 12V module is designed to power the Астра-713 expander. Transmission of the state is provided. Power supply failure РИП-24 исп. 06 to the Астра-8945 Pro device and transfer state Power supply failure РИП-24 исп. 12 on the display unit Астра-863 исп. A.

The design documentation provides for the shutdown of the supply and exhaust ventilation and air conditioning system when the Fire signal is generated by supplying 24V power to the VS425-04 contactor from the Астра-8945 Pro device.

The design documentation provides for a fire warning and evacuation system (hereinafter referred to as FWES) of the 2nd type. For the organization of FWES, a combined fire annunciator Астра-2331 is used.

Algorithm of work of SOUE: light sounders Astra-Z-2745 and combined Astra-Z-2345 in the Norm mode are turned off, when a Fire signal is generated, they are turned on.

FAS work algorithm:

- the Norm mode, the state in which all the technical means of the FAS are in the Norm mode, the light indication of the Norm is switched on on the technical means of the FAS;
- Fault mode, the state in which at least one technical means of the FAS is in the Fault mode while the Астра-814 Pro console and the Астра-863 исп. A the light and sound alarm is turned on, on the other technical means of the ATP, the light indication Fault is turned on, the Fault message is sent to the phone of the responsible person of the economic agency;
- Attention mode, the state in which the smoke threshold is exceeded Attention of the fire smoke detector Астра-Z-4245 and the ИПДЛ-52СМД detector, while on the Астра-814 Pro console and the Астра-863 исп. A block, light and sound alarms are turned on, message Attention;
- Fire mode, the state in which the smoke threshold is exceeded Fire of the fire smoke detector Астра-Z-4245 and the ИПДЛ-52СМД detector, or the threshold of the temperature value and temperature rise rate of the Астра-Z-4345 detector is exceeded or the actuator of the Астра-Z-4545 hand-held fire detector is pressed, while on the Астра-814 Pro console and the Астра-863 исп. A the light and sound alarm is turned on, the ventilation and air conditioning system is turned off, the FWES is turned on and the Fire message is sent to the phone of the responsible person of the owner.

Астра-8945 Pro device, Астра-814 Pro remote control, Астра-713 expander and РИП-24 исп. 06 power supply set at the security post. Install Астра-Z-8845 repeater routers in the corridor. Block Астра-863 исп. A and power supply РИП-24 исп. 12 to be installed in the machine room. Install fire detectors and sirens in accordance with the equipment layout plans.

4.2. Technical means AFES are designed to detect and extinguish a fire at an early stage and provide:

- monitoring the status of alarm loops with fire detectors and starting circuits of powder and gas fire extinguishing modules;
- automatic and remote start-up of the installation; - control of executive devices (switching off ventilation in case of fire, technological equipment of diesel and boiler rooms, switching on the FWES, switching on sirens Powder leave, Automation is off and Powder does not enter);
- displaying on the С2000М console and the С2000-ПТ display unit information about the state of the AFES technical means by directions;
- registration and storage of information about all events in the non-volatile memory of the С2000М console;
- restricting access to control and programming functions using passwords.
- automatic transmission of voice messages and notifications in the SMS format when the signals Fault, Attention, Fire and Start AFES are generated to the phone of the responsible person of the owner.

The С2000М console is designed to monitor the status and control of technical equipment that are connected to the console.

С2000-АСПТ, С2000-ПТ, С2000-КПБ and С2000-СП1 units, С2000-ПИ interface repeater, У0-4С terminal device and РИП-24 исп. 50, РИП-24 исп. 56 и РИП-12 исп. 54 power supplies are connected to the S2000М console via the RS485 ring interface. .

The С2000-АСПТ unit is designed to control the AFES in automatic and remote modes, receive and transmit information to the С2000М console. To expand the number of starting circuits, С2000-КПБ units are connected to the С2000-АСПТ unit via the RS485 interface.

The C2000-ПТ unit is designed for light and sound indication of the state of the technical means of AUP and remote control of the AFES.

The S2000-КРВ unit is designed to expand the number of AFES starting circuits and to turn off the technological equipment of a diesel and boiler room by supplying 24V power to the switching device УК/ВК ucn. 14 when the Fire signal is generated.

The C2000-СП1 unit and the C2000-ПИ interface repeater are designed to organize the RS485 ring interface and maintain the AFES in the event of a break or short circuit in the communication line.

Terminal device УО-4С ucn. 02 is intended for automatic transmission of voice messages and notifications in the SMS format when the Fault, Attention, Fire and AFES start signals are generated to the telephone of the responsible person of the owner.

Switching device УК/ВК ucn. 14 is designed to turn off the technological equipment of the diesel and boiler rooms when the Fire signal is generated.

The Буран-8Н powder fire extinguishing module is designed to localize and extinguish a fire in a diesel and boiler room upon receiving a start pulse from the C2000-КПБ unit.

The ДИП-31 smoke detector is designed to detect fires accompanied by the appearance of smoke and transmit Norm, Malfunction, Attention and Fire notifications to the C2000-АСПТ unit.

Combined gas and heat fire detector ИП435-8/101-04-А1R СОнем is designed to detect a fire accompanied by the appearance of carbon monoxide and when the threshold value of temperature and the rate of temperature rise and transmission of notifications is exceeded Fault, Norm, Attention and Fire to C2000-АСПТ unit.

The ЭДУ513-3М remote start device is designed to generate a Fire signal when the drive button is pressed and to transmit Fault, Norm and Fire notifications to the C2000-АСПТ unit.

The magnetic contact detector ИО102-20 А2П В is designed to control the position of the doors in the room protected by the AFES and transmit notifications Door open and Door closed to the C2000-АСПТ unit.

The "Powder go away" КОП-25П(С) annunciator is intended for light and sound notification of the personnel in the protected AFES about the transition of the AUP to the Fire and Start Delay modes.

The "Do not enter powder" КОП-25П annunciator is intended for light notification of the personnel being in front of the protected AFES entering the room about the AFES transition to the Fire mode, Start delay and AFES start.

The "Automation disabled" КОП-25П annunciator for light notification of personnel who are in front of the protected AUP entering the room about the AFES transition to the Automation mode is disabled or Automation is enabled.

Power supplies РИП-24 ucn. 50 and РИП-24 ucn. 56 are intended for power supply of technical means of AUP with voltage of 24V. Power supply РИП-12 ucn. 54 is intended for power supply of the UO-4S device.

Calculation of the number of fire extinguishing modules

The project provides for extinguishing the protected area. The calculation results for the diesel room are summarized in table 2, for the boiler room - in table 3. The number of modules required to extinguish a fire is determined by the formula (attachment И, СП 485.1311500.2020):

$$N = S_У/S_Н \times K_1 \times K_2 \times K_3 \times K_4$$

Table 2

$S_У$ – area of the protected premises, limited by building structures, m2	30,0
$S_Н$ – area protected by one module, m2 (module documentation, class B fire site)	20,0
$S_З$ – shading area, m2, (diesel generator 2,2x1,0 m)	2,2
K_1 – powder spray unevenness factor (module documentation)	1,0
K_2 – safety factor taking into account the shading of a possible fire source, $S_З/S_У$ = 2,2/30,0 = 0,07<0,15, K_2 = 1 + 1,33 x 0,07 = 1,1	1,1
K_3 – coefficient taking into account the change in the fire extinguishing ability of the used powder in relation to the combustible substance in the protected area in comparison with gasoline A-76 (diesel fuel)	0,9
K_4 – coefficient taking into account the degree of leakage of the room	1,2
N – estimated number of modules, pcs.	2
Designed number of modules, pcs. (taking into account the shading area of the hearth)	3
Module type	МПП(р)-8Н

Согласовано

Взам. подл. №

Подпись и дата

Инв. № подл.

Table 3

$S_у$ – area of the protected premises, limited by building structures, m2	30,0
$S_н$ – area protected by one module, m2 (module documentation, class B fire site)	20,0
$S_з$ – shading area, m2, (boiler boiler D = 1.8 m – 2 pcs.)	5,1
K_1 – powder spray unevenness factor (module documentation)	1,0
K_2 – safety factor taking into account the shading of a possible fire source, $S_з/S_у$=5,1/30,0=0,17>0,15, installation of additional modules	1,0
K_3 – coefficient taking into account the change in the fire extinguishing ability of the used powder in relation to the combustible substance in the protected area in comparison with gasoline A-76 (diesel fuel)	0,9
K_4 – coefficient taking into account the degree of leakage of the room	1,2
N – estimated number of modules, pcs.	2
Designed number of modules, pcs. (taking into account the shading area of the hearth)	4
Module type	МПП(р)-8Н

The number of МПП(р)-8Н modules adopted in the project is 11 pcs., Including the stock – 4 pcs.

Calculation of the AFES start delay time

1. To calculate the AUP start delay time, we determine the estimated time of evacuation of people from the diesel and boiler rooms in accordance with Attachment 2 Methods for determining the calculated values of fire risk in buildings, structures and fire compartments of various classes of functional fire hazard (Order of the Ministry of Emergency Situations dated June 30, 2009 No. 382).
2. For the calculation, we take the most distant place of the possible location of people; for diesel and boiler rooms, the length of the evacuation path is 8 m.
3. Estimated time of evacuation of people from the diesel and boiler room:

$$t = L / V = 8/100 = 0.08 \text{ min} = 5 \text{ sec.}$$

where: L = 8 m is the length of the evacuation path,
V = 100 m/min – the speed of movement of the human flow, taken from the table П2.1, Attachment 2 Methods depending on the density of the traffic D

$$D = N \times f / L \times d = 2 \times 0{,}125 / 8 \times 1{,}0 = 0{,}031 \text{ m2/m2}$$

Where: N = 2 persons – the number of people in the room,
f = 0.125 m2 – the average area of the horizontal projection of a person,
L = 8 m is the length of the evacuation path,
d = 1.0 m – the width of the escape route.
4. Delay time for starting AFES – not less than 30 sec.

Algorithm of AFES:

- Norm mode, the state in which all the technical means of the AFES are in the Norm mode, the Norma light indication is turned on on the technical means of the AFES;
- Fault mode, the state in which at least one AFES technical means is in Fault mode, while on the C2000M console and C2000-АСПТ, S2000-ПТ units light and sound alarms are turned on, on the rest of the AFES technical means the Fault indication is on, the phone of the person in charge the person of the owner is sent a message Malfunction;
- the Automatic start mode is performed under the following conditions: the technical means of the AFES are in Automatic mode, the doors of the protected AFES are closed, when a fire detector in one loop is triggered, the AFES goes into the Attention mode, when a fire detector in another loop is triggered, the AFES goes into Fire mode, the C2000-АСПТ unit generates a command to turn on the sirens Powder leave, Do not enter the powder and the start of the AFES start delay time countdown, after the delay time expires, the C2000-АСПТ unit generates a command to start the AFES, the C2000-КПБ unit connected to the C2000-АСПТ unit sequentially issues a 24V pulse to the Буран-8Н powder fire extinguishing modules, the AFES is started, while all modes are displayed on the C2000M console and C2000-АСПТ and C2000-ПТ units;

- the Remote start mode is executed under the following conditions: the AFES hardware is in Automatic mode, the doors of the protected AFES room are closed, the Remote start mode is performed using the C2000-ПТ unit, to gain access to the C2000-ПТ unit control, you must bring the Touch Memory key to the block reader and press the Start button, then the Automatic start mode is executed.
- the Manual start mode is executed under the following conditions: the AFES hardware is in the Automatior on or Automatic off mode, the doors of the protected AFES are closed, the Manual start mode is executed by pressing the drive button of the УДП513-3М remote start device.
- in the Automatic start, Remote start and Manual start modes, the technological equipment of the diesel anc boiler room and the ventilation system are turned off, the FWES is turned on and messages Attention, Fire and Start AFES are sent to the phone of the responsible person of the owner.

CS2000M console, C2000-АСПТ, C2000-КПБ and C2000-СП1 units, C2000-ПИ interface repeater, УО-4С terminal device and РИП-24 исп. 56 and РИП-12 исп. 54 power supplies to be installed at the security post C2000-ПТ unit, C2000-ПИ interface repeater and РИП-24 исп. 50 power supply to be installed in the machine room. Install fire extinguishing modules, fire detectors and sirens in accordance with the equipment layout plans.

4.3. SAS technical means are designed to detect attempts to enter an object and provide:
- monitoring the status of security detectors and sirens;
- control of the serviceability of communication lines with the detection of breakage and short circuit and control of the serviceability of technical means and the formation of the Malfunction signal;
- formation and issuance of alarm signals in case of unauthorized entry or attempted entry into the protectec premises;
- formation and issuance of the Alarm signal when the alarm detector is triggered;
- activation of light and sound annunciators when the Alarm signal is generated;
- control of security alarm zones with display of their status on the Астра-863 исп. Б;
- control of the technical means of the SAS by means of the Астра-812 Pro device when dialing the PIN-code, the Астра-8131 remote control when dialing the PIN-code, the Астра-863 исп. Б when identifying the Touch Memory key;
- registration and storage of information about all events in the non-volatile memory of the Астра-812 Pro device;
- restricting access to control and programming functions;
- automatic transmission of voice messages and notifications in the SMS format when the Fault and Alarm signals are generated to the phone of the responsible person of the owner.

The Астра-812 Pro device is designed to monitor the status and control of the technical means of the SAS connected to the RS485 interface, monitor the status and control of security detectors and sirens, the Астра-8131 console and the Астра-РИ-М PP radio expander via a radio channel in the operating frequency range 433.42 / 434.42 MHz, the transmission of voice messages and notifications in the SMS format when the Fault and Alarm signals are generated to the telephone of the responsible person of the economic organization through the communication module Астра-GSM (ПАК Астра), Астра-863 исп. Б is connected to the RS485 interface.

Block Астра-863 исп. Б is intended for light and sound indication of the state of the SAS sections anc control of arming and disarming SAS sections. Access to the management of sections is carried out by identifying the Touch Memory key with a contactless reader.

The Астра-8131 console is designed for light and sound indication of the state of the SAS sections anc control of arming and disarming SAS sections. Access to the management of sections is carried out by entering the PIN-code. Use the Astra-8131 remote control to control arming and disarming of the following sections control room, security post, repair shop and communication and data transmission room.

The Астра-РИ-М PP radio expander is designed to receive notifications from security detectors and sirens and relay their status to the Астра-812 Pro device via a radio channel in the 433.42 / 434.42 MHz operating frequency range. Operating mode of the radio expander Repeater.

Security detector Астра-5131 исп. А is designed to detect intrusion into the protected area and transmit the Fault, Armed, Disarmed and Alarm messages to the Астра-812 Pro device via the radio channel.

Security detector Астра-5131 исп. Ш is designed to detect intrusion into the protected area through a door break and transmit the Fault, Armed, Disarmed and Alarm messages to the Астра-812 Pro device via radio channel.

The Астра-6131 security alarm detector is designed to detect glass breakage in a guarded room and transmit Fault, Armed, Disarmed and Alarm messages to the Астра-812 Pro device via the radio channel.

The Астра-3321 magnetic contact security detector is designed to block the opening of doors and windows and transmit Fault, Armed, Disarmed and Alarm to the Астра-812 Pro device via radio channel.

Combined security annunciator Астра-2331 is intended for information on the state of the SAS technical means in the following mode: Armed – the light annunciator is constantly on, Disarmed – the light annunciator is not on, Alarm – the light annunciator is on intermittently, the audible annunciator is on and notifications are transmitted Fault, On protection, Disarmed and Alarm to the Астра-812 Pro device via radio channel.

Power supplies РИП-12 исп. 01 with boxing Бокс-12 исп. 0 and РИП-12 исп. 02 are intended for power supply of technical means of SAS with a voltage of 12V.

SAS operation algorithm:

- Armed mode, the state of the section (room, office, etc.) in which all the technical means of the SAS related to the section are in the Armed mode, the Armed light indication is turned on on the SAS technical means;
- Disarmed mode, the state of the section (room, office, etc.) in which all the SAS technical means related to the section are in the Disarmed mode, the Disarmed light indication is on on the SAS hardware;
- Fault mode, a state in which at least one technical means of the SAS is in the Fault mode while on the Астра-812 Pro device and the Астра-863 исп. Б light and sound alarms are turned on, on the other technical means of the SAS, the light indication Fault is turned on, a Fault message is sent to the phone of the responsible person of the owner;
- Alarm mode, the state in which at least one security detector is in Alarm mode, while the Астра-812 Pro device and the Астра-863 исп. Б the light and sound alarm is switched on, the Alarm message is sent to the phone of the responsible person of the owner.

Астра-812 Pro device and РИП-12 исп. 01 power supply with boxing Бокс-12 исп. 0 set at the security post. Install the Астра-РИ-М РР radio expanders in the corridor. Install the Астра-8131 consoles in front of the entrance to the control room and to the repair shop. Block Астра-863 исп. Б and power supply РИП-12 исп. 02 to be installed in the machine room. Install security detectors and sirens in accordance with the equipment layout plans.

5. Power supply

According to the degree of ensuring the reliability of power supply, the consumers of the FAS, AFES and SAS belong to the 1st category.

The Object belongs to the III category in terms of power supply reliability and is provided with an autonomous backup power supply from a diesel generator, in connection with this project, it is envisaged to use power sources with rechargeable batteries, which, in the absence of the main voltage, ensure the operation of the FAS technical means in standby mode for 24 hours and in the alarm mode for 1 hour and the operation of the technical means of the SAS in the standby mode for 24 hours and in the alarm mode for 3 hours.

The power supply for the Астра-8945 Pro device, the Астра-814 Pro console, the Астра-713 expander using the МП 24/12В module, the Астра-Z-8845 repeater-routers and the Астра-А ИЛС communication line isolators is provided from the РИП-24 исп. 06. Power supply of the Астра-863 исп. А and insulators of the communication line Астра-А ИЛС is provided from the power source РИП-24 исп. 12. Backup power supply of power supplies РИП-24 исп. 06 and РИП-24 исп. 12 is provided from storage batteries (see table 4).

Power supply of the С2000М console, С2000-КПБ and С2000-СП1 units, repeaters of the С2000-ПИ interface is provided from the РИП-24 исп. 56. The power supply of the УО-4С device is provided from the РИП-12 исп. 54. The power supply for the С2000-ПТ unit and the С2000-ПИ interface repeater is provided from the РИП-24 исп. 50. Power supply for С2000-АСПТ units is provided from a single-phase electrical network with a voltage of 220V/50Hz from separate circuit breakers of the security system shield. Backup power supply of power supplies РИП-24 исп. 56, РИП-12 исп. 54 and РИП-24 исп. 50 and С2000-АСПТ unit is provided from storage batteries (see table 5).

Power supply for the Астра-812 Pro device, Астра-8131consoles, Астра-РИ-М РР radio expanders and Астра-2331 sirens is provided from the РИП-12 исп. 01 with boxing Бокс-12 исп. 0. Power supply of the Астра-863 исп. Б is provided from the power source РИП-12 исп. 02. Backup power supply of power supplies РИП-12 исп. 01 and РИП-12 исп. 02 is provided from rechargeable batteries (see table 6).

At the location of the control and monitoring equipment of the FAS, AFES and SAS at the guard post and in the engine room, an emergency lighting device is provided using DPA-2104 lamps.

Power supply of power supplies РИП-24 исп. 06, РИП-24 исп. 12, РИП-24 исп. 56, РИП-12 исп. 54, РИП-24 исп. 50, РИП-12 исп. 01 и РИП-12 исп. 02 is provided from a single-phase electrical network with a voltage of 220V / 50Hz from separate circuit breakers of the security system shield.

Power supply and protective grounding are provided by the customer in accordance with the attached construction assignment (see sheet 311/2021-FS1.СА).

The choice of an uninterruptible power supply unit FAS

Table 4

Designation on the project	Name current consumption equipment	Quantity, pcs.	Consumption current, mA		Total current consumption, mA	
			Standby mode	Alarm	Standby mode	Alarm
UPS5	Астра-863 исп. А	1	144	144	144	144
	Астра-А ИЛС	2	5	5	10	10
	РИП-24 исп. 12	1	40	40	40	40
					194	194

Battery capacity calculation:
Standby time 24 hours – $E_{бат.д}$ = 0,2Ax24h/0,8 =6,0Axh
Operating time in alarm mode 1 hour – $E_{бат.тр}$ = 0,2Ax1h/0,8 =0,3Axh
Required battery capacity $E_{бат.}$= $E_{бат.д}$ + $E_{бат.тр}$ =6,0Axh+0,3Axh=6,3Axh
0.8 – safety factor (20% of the full discharge of the battery)
For the UPS5 power supply, we accept: redundant power supply РИП-24 исп. 12
Nominal output voltage – 24V
Output rated current – 1,0A
Storage battery 12V/7Axh – 2 pcs.

Designation on the project	Name current consumption equipment	Quantity, pcs.	Consumption current, mA		Total current consumption, mA	
			Standby mode	Alarm	Standby mode	Alarm
UPS6	Астра-8945 Pro	1	140	140	140	140
	Астра-814 Pro	1	120	120	120	120
	Астра-713	1	180	230	180	230
	Астра-Z-8845	6	25	110	150	660
	Астра-А ИЛС	4	5	5	20	20
	РИП-24 исп. 06	1	70	70	70	70
					680	1240

Battery capacity calculation:
Standby time 24 hours – $E_{бат.д}$ = 0,68Ax24h/0,8 =20,4Axh
Operating time in alarm mode 1 hour – $E_{бат.тр}$ = 1,24Ax1h/0,8 =1,6Axh
Required battery capacity $E_{бат.}$= $E_{бат.д}$ + $E_{бат.тр}$ =20,4Axh+1,6Axh=22,0Axh
0.8 – safety factor (20% of the full discharge of the battery)
For the UPS6 power supply, we accept: redundant power supply РИП-24 исп. 06
Nominal output voltage – 24V
Output rated current – 4,0A
Storage battery 12V/26Axh – 2 pcs.

The choice of an uninterruptible power supply unit AFES

Table 5 (beginning)

Designation on the project	Name current consumption equipment	Quantity, pcs.	Consumption current, mA		Total current consumption, mA	
			Standby mode	Alarm	Standby mode	Alarm
UPS8	С2000-ПТ	1	50	200	50	200
	С2000-ПИ	1	60	60	60	60
	РИП-24 исп. 50	1	40	40	40	40
					150	300

Battery capacity calculation:
Standby time 24 hours – $E_{бат.д}$ = 0,15Ax24h/0,8 =4,5Axh
Operating time in alarm mode 1 hour – $E_{бат.тр}$ = 0,3Ax1h/0,8 =0,4Axh
Required battery capacity $E_{бат.}$= $E_{бат.д}$ + $E_{бат.тр}$ =4,5Axh+0,4Axh=4,9Axh
0.8 – safety factor (20% of the full discharge of the battery)
For the UPS8 power supply, we accept: redundant power supply РИП-24 исп. 50
Nominal output voltage – 24V
Output rated current – 2,0A
Storage battery 12V/7Axh – 2 pcs.

Designation on the project	Name current consumption equipment	Quantity, pcs.	Consumption current, mA		Total current consumption, mA	
			Standby mode	Alarm	Standby mode	Alarm
UPS9	УО-4С исп. 02	1	150	200	150	200
	РИП-12 исп. 54	1	30	30	30	30
					180	230

Battery capacity calculation:
Standby time 24 hours – $E_{бат.д}$ = 0,18Ax24h/0,8 =5,4Axh
Operating time in alarm mode 1 hour – $E_{бат.тр}$ = 0,23Ax1h/0,8 =0,3Axh
Required battery capacity $E_{бат.}$= $E_{бат.д}$ + $E_{бат.тр}$ =5,4Axh+0,3Axh=5,7Axh
0.8 – safety factor (20% of the full discharge of the battery)
For the UPS9 power supply, we accept: redundant power supply РИП-12 исп. 54
Nominal output voltage – 12V
Output rated current – 2,0A
Storage battery 12V/7Axh – 1 pcs.

Designation on the project	Name current consumption equipment	Quantity, pcs.	Consumption current, mA		Total current consumption, mA	
			Standby mode	Alarm	Standby mode	Alarm
UPS12	С2000М	1	35	65	35	65
	С2000-СП1	1	15	70	15	70
	С2000-КПБ	3	40	75	120	225
	С2000-ПИ	2	60	60	120	120
	Буран-8Н	1	–	200	–	200
	УК/ВК исп. 14	2	–	20	–	40
	РИП-24 исп. 56	1	80	80	80	80
					370	800

Battery capacity calculation:
Standby time 24 hours – $E_{бат.д}$ = 0,37Ax24h/0,8 =11,1Axh
Operating time in alarm mode 1 hour – $E_{бат.тр}$ = 0,8Ax1h/0,8 =1,0Axh
Required battery capacity $E_{бат.}$= $E_{бат.д}$ + $E_{бат.тр}$ =11,1Axh+1,0Axh=12,1Axh
0.8 – safety factor (20% of the full discharge of the battery)
For the UPS12 power supply, we accept: redundant power supply РИП-24 исп. 56
Nominal output voltage – 24V
Output rated current – 4,0A
Storage battery 12V/26Axh – 2 pcs.

Table 5 (ending)

Designation on the project	Name current consumption equipment	Quantity, pcs.	Consumption current, mA	Total current consumption, mA
			Standby mode	Standby mode
ARK3 (ARK5)	C2000-АСПТ	1	60	60
	КОП-25П Automation disabled	1	20	20
			80	80

Battery capacity calculation:
Remaining battery capacity after 24 hours of standby operation:
$E_{ост} = 0,8 \times (E_{бат} - 24 \times I_{деж}) = 0,8 \times (5Axh - 24h \times 0,08A) = 2,4h > 1h$
$E_{бат}$ – standard battery capacity 2x12V/5Axh
24h – unit operation time in standby mode
1h – operating time of the unit in alarm mode
$I_{деж}$ – current consumption of the unit in standby mode, A
0.8 – safety factor (20% of the full discharge of the battery)
For the backup power supply unit ARK3 (ARK5) we accept:
Storage battery 12V/5Axh – 2 pcs.

The choice of an uninterruptible power supply unit SAS

Table 6

Designation on the project	Name current consumption equipment	Quantity, pcs.	Consumption current, mA		Total current consumption, mA	
			Standby mode	Alarm	Standby mode	Alarm
UPS3	Аспра-863 исп. Б	1	160	160	160	160
	РИП-12 исп. 02	1	30	30	30	30
					190	190

Battery capacity calculation:
Standby time 24 hours – $E_{бат.д} = 0,2Ax24h/0,8 = 6,0Axh$
Operating time in alarm mode 3 hour – $E_{бат.пр} = 0,2Ax3h/0,8 = 0,8Axh$
Required battery capacity $E_{бат.} = E_{бат.д} + E_{бат.пр} = 6,0Axh+0,8Axh=6,8Axh$
0.8 – safety factor (20% of the full discharge of the battery)
For the UPS3 power supply, we accept: redundant power supply РИП-12 исп. 02
Nominal output voltage – 12V
Output rated current – 2,0A
Storage battery 12V/7Axh – 1 pcs.

Designation on the project	Name current consumption equipment	Quantity, pcs.	Consumption current, mA		Total current consumption, mA	
			Standby mode	Alarm	Standby mode	Alarm
UPS4	Аспра-812 Pro	1	120	120	120	120
	Аспра-РИ-М РР	4	100	100	400	400
	Аспра-8131	2	20	70	40	140
	Аспра-2331	4	100	200	400	800
	РИП-12 исп. 01	1	40	40	40	40
					1000	1500

Battery capacity calculation:
Standby time 24 hours – $E_{бат.д} = 1,0Ax24h/0,8 = 30,0Axh$
Operating time in alarm mode 3 hour – $E_{бат.пр} = 1,5Ax3h/0,8 = 5,6Axh$
Required battery capacity $E_{бат.} = E_{бат.д} + E_{бат.пр} = 30,0Axч+5,6Axч=35,6Axч$
0.8 – safety factor (20% of the full discharge of the battery)
For the UPS4 power supply, we accept: redundant power supply РИП-12 исп. 01 with boxing Бокс-12 исп. 0
Nominal output voltage – 12V
Output rated current – 3,0A
Storage battery 12V/17Axh – 3 pcs.

6. Cable lines

Cable lines FAS perform:

- interface line RS-485 – cable КИС-РВнг(А)-FRLS 2х2х0,5мм;
- interface line RS-485 outdoor – cable ParLan U/UTP Cat5e PE 4х2х0,52мм;
- power supply line 24V – cable КСРВнг(А)-FRLS 1х2х0,97мм;
- connecting lines – cable КСРВнг(А)-FRLS 4х0,5мм;
- power supply line 220V – cable ВВГнг(А)-FRLS 3х1.5мм2.

Cable lines AFES perform:

- interface line RS-485 – cable КИС-РВнг(А)-FRLS 2х2х0,5мм;
- interface line RS-485 outdoor – cable ParLan U/UTP Cat5e PE 4х2х0,52мм;
- power supply line 12V and 24V – cable КСРВнг(А)-FRLS 1х2х0,97мм;
- starting circuits of fire extinguishing modules – cable кабелем КСРВнг(А)-FRLS 1х2х1,38мм;
- alarm loops – cable КСРВнг(А)-FRLS 4х0,5мм;
- power supply line 220V – cable ВВГнг(А)-FRLS 3х1.5мм2;
- grounding line – wire ПуВнг(А)-LS 1х2,5мм2.

Cable lines SAS perform:

- interface line RS-485 – cable КИС-Внг(А)-LS 2х2х0,60мм;
- interface line RS-485 outdoor – cable ParLan U/UTP Cat5e PE 4х2х0,52мм;
- power supply line 12V – cable КСВВнг(А)-LS 1х2х0,97мм;
- connecting lines – cable КСВВнг(А)-LS 4х0,5мм;
- power supply line 220V – cable ВВГнг(А)-LS 3х1.5мм2.

The cable lines should be laid in a cable channel, in a flexible corrugated pipe, with a suspension on a cable and open on brackets.

7. Configuring

Configure the FAS using a personal computer with preinstalled software ПКМ Астра Pro версии 5.5. If necessary, update the Астра-8945 Pro device to version 5.5. Connect a personal computer to the Астра-8945 Pro device using the Астра-984 interface unit. Perform the configuration in accordance with the instructions of the user of the software ПКМ Астра Pro, the Астра-8945 Pro device, this project documentation and in agreement with the owner.

Configuring AFES. The configuration parameters of the S2000M control panel can be set using a personal computer with preinstalled PProg software. The configuration parameters of the equipment included in the AFES can be set using a personal computer with the preinstalled UProg software. Connect a personal computer to the C2000M console using a USB-RS485 interface converter. Perform the configuration in accordance with the PProg and UProg user manual, this project documentation and in agreement with the owner.

Configure the SAS using a personal computer with preinstalled software ПКМ Астра Pro версии 5.3. If necessary, update the Астра-812 Pro device to version 5.3. Connect a personal computer to the Астра-812 Pro device using the Астра-984 interface unit. Perform the configuration in accordance with the instructions of the user of the software ПКМ Астра Pro, the Астра-812 Pro device, this project documentation and in agreement with the owner.

8. Условные обозначения принятые в проекте

Обозначение	Наименование
ARKx	Fire alarm control panel Астра-8945 Pro (Also Астра-812 Pro)
RMCx	Monitoring and control panel Астра-814 Pro (Also С2000М)
DALx	Expander of alarm loops Астра-713
DUKx	Display unit Астра-863 исп. А (Тоже Астра-863 исп. Б)
xRRy	Radio expander Астра-РИ-М РР (Also repeater Астра-Z-8845)
IS	Communication line isolator Астра-А ИЛС
ARKx	Control unit for automatic fire extinguishing means С2000-АСПТ
DUFx	Fire extinguishing system display unit С2000-ПТ
BSSx	Signal and starting unit С2000-СП1
BCSx	Control and starting unit С2000-КПБ
DBNx	Terminal device УО-4С
SI	Repeater of interface С2000-ПИ
UPSx	Redundant power supply
МП	Converter module МП 24/12В
xRCy	Radio channel control panel Астра-8131
xBTHy	Radio channel smoke fire detector Астра-Z-4245
xBTHLy	Linear smoke fire detector ИПДЛ-52СМД
xBTKy	Radio channel thermal fire detector Астра-Z-4345
xBTMy	Radio channel manual fire detector Астра-Z-4545
xBIALSy	Radio channel combined security and fire siren Астра-Z-2345 (Астра-2331)
xBIALy	Radio channel fire warning light Астра-Z-2745
xSCy	Modular contactor VS425-04 (Also switching device УК/ВК исп. 14)
xBGLy	Radio channel security detector volumetric Астра-5131 исп. А
xBGSy	Radio channel security detector surface Астра-5131 исп. Ш
xBGTy	Radio channel security detector surface sound Астра-6131
xBGBy	Radio channel security detector magnetic contact point Астра-3321
xBGMy	Radio channel security detector electrical point Астра-3221
RTM	Reader Touch Memory Reader-2
xMPFy	Module of powder fire extinguishing Буран-8Н
xBTHy.z	Smoke fire detector ДИП-31
xBTKy.z	Combined gas and heatfire detector ИП415-8/101-04-А1R СОнет

Согласовано

Взам. подл. №

Подпись и дата

Инв. № подл.

Chang	Party	Sheet	№ doc.	Signature	Date	311/2021-FS1.EN	Sheet 14

A4 format

Обозначение	Наименование
xBTMy	Remote start device ИПР513-3М
xBGBz	Magnetic contact point detector ИО102-20
xBIALSz	Combinate fire alarm КОП-25П(С)
xBIALz	Fire alarm light КОП-25П
ELD	Emergency lighting lamp ДПА-2104
ЩСБz	Power security system shield
ВРУ	Input distribution device
d16	Laying a cable line in a corrugated pipe
25x16	Laying a cable line in a cable channel
	Laying a cable line on a cable suspension
	Transition of a cable line through a suspended ceiling

Примечания: x - number (address) of the device, radio expander, control panel, unit, power supply;
y - address of the detector, radio expander, repeater, loop number, block output number;
z - serial number of the detector, siren, shield.

Согласовано

Взам. подл. №

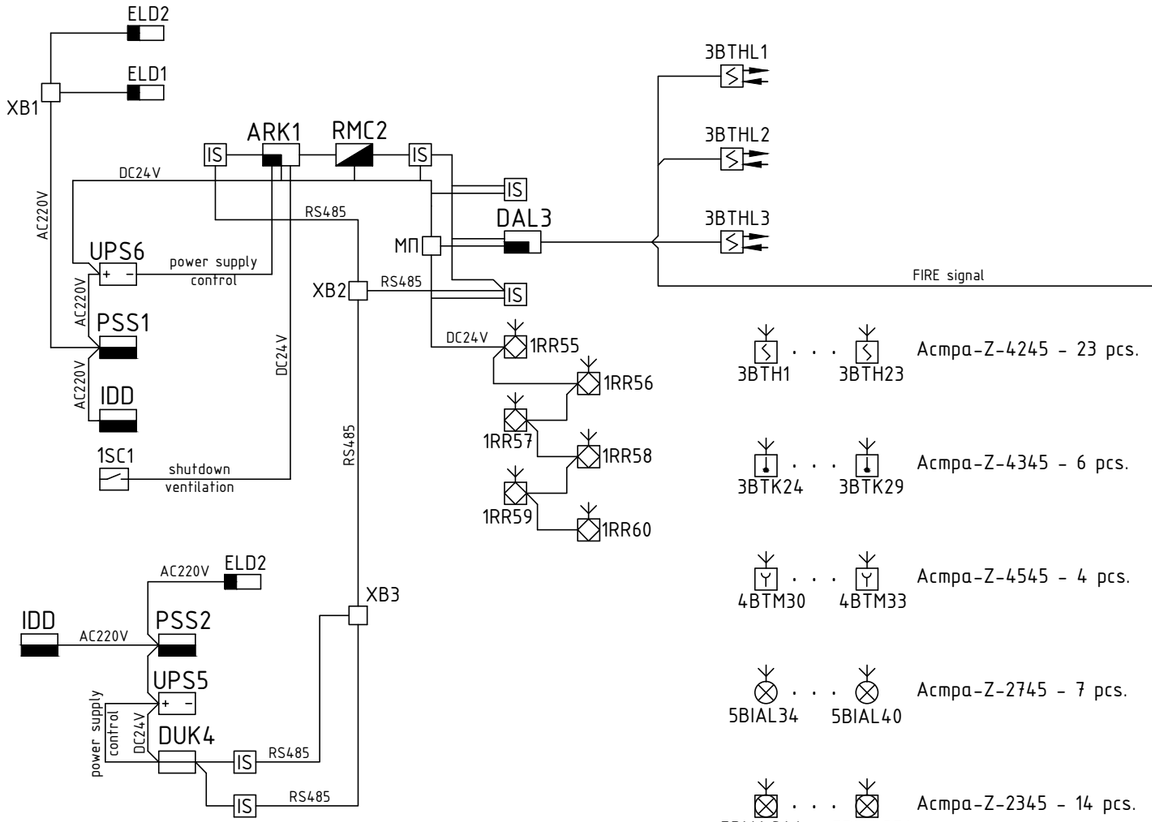
Подпись и дата

Инв. № подл.

Chang	Party	Sheet	№ doc.	Signature	Date	311/2021-FS1.EN	Sheet 15

A4 format

Fire alarm system



3BTH1 . . . 3BTH23 — Асрга-Z-4245 - 23 pcs.

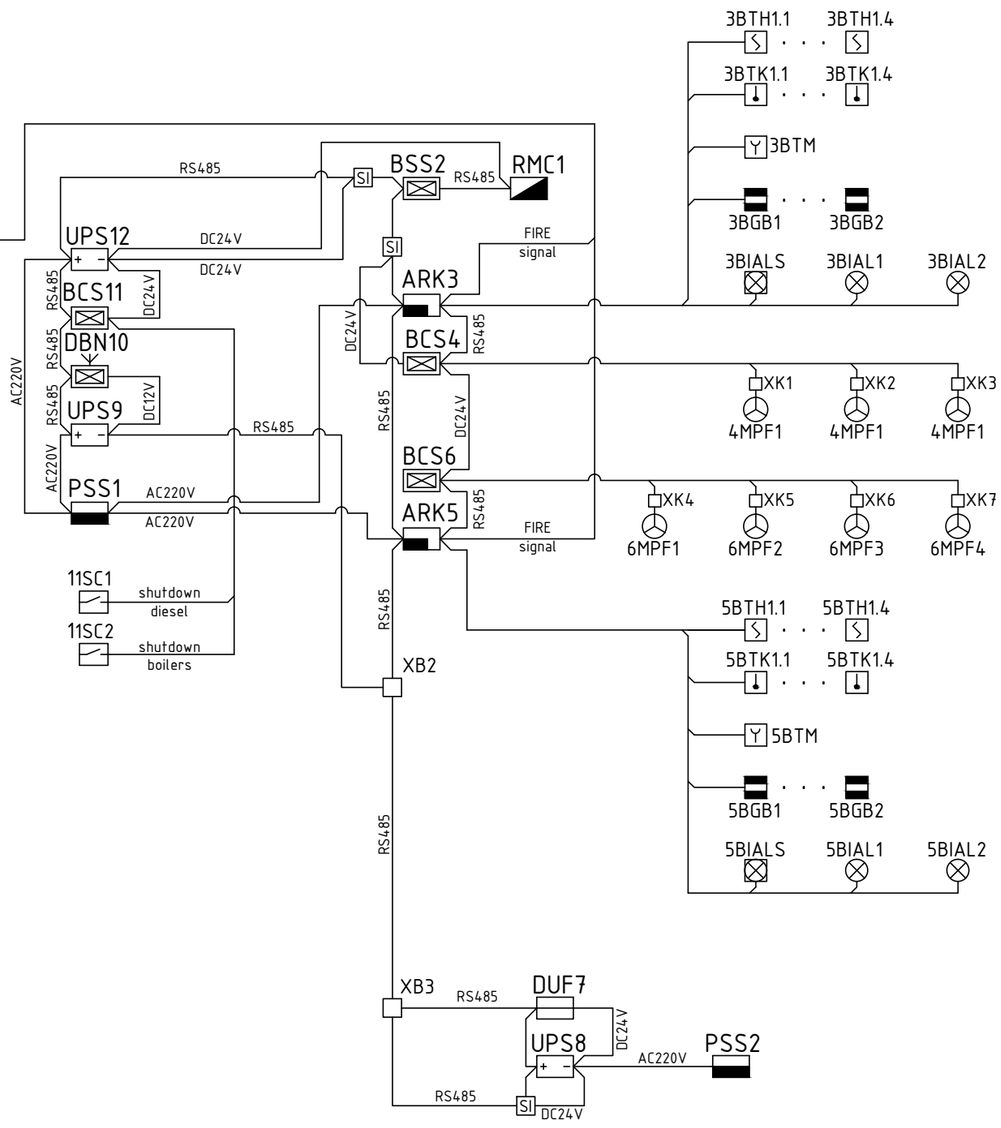
3BTK24 . . . 3BTK29 — Асрга-Z-4345 - 6 pcs.

4BTM30 . . . 4BTM33 — Асрга-Z-4545 - 4 pcs.

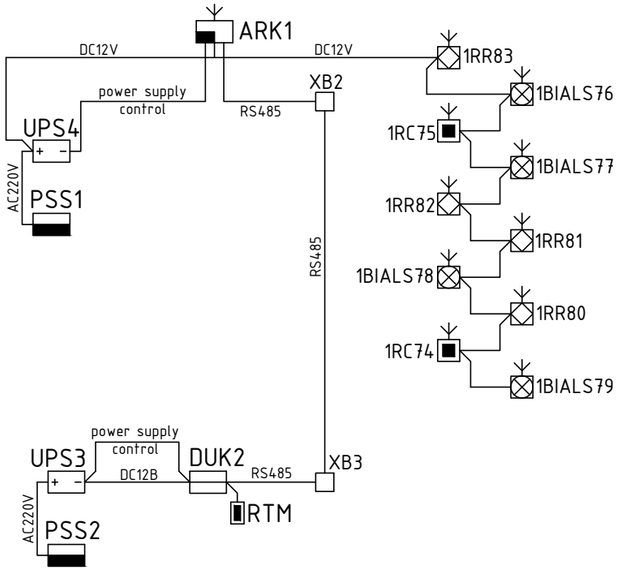
5BIAL34 . . . 5BIAL40 — Асрга-Z-2745 - 7 pcs.

5BIALS41 . . . 5BIALS54 — Асрга-Z-2345 - 14 pcs.

Automatic fire extinguishing system



Security alarm system



1BGL1 . . . 1BGL16 — Асрга-5131 исп. А - 16 pcs.

1BGT17 . . . 1BGT29 — Асрга-6131 - 13 pcs.

1BGS30 . . . 1BGL33 — Асрга-5131 исп. Ш - 4 pcs.

1BGB34 . . . 1BGB72 — Асрга-3321 - 39 pcs.

1BGM73 — Асрга-3221 - 1 pcs.

Chang	Party	Sheet	№ doc.	Signature	Date
Developed		Sinelnikov			03.21.
CPE		Sinelnikov			03.21.
Reg.control		Ivanov			03.21.

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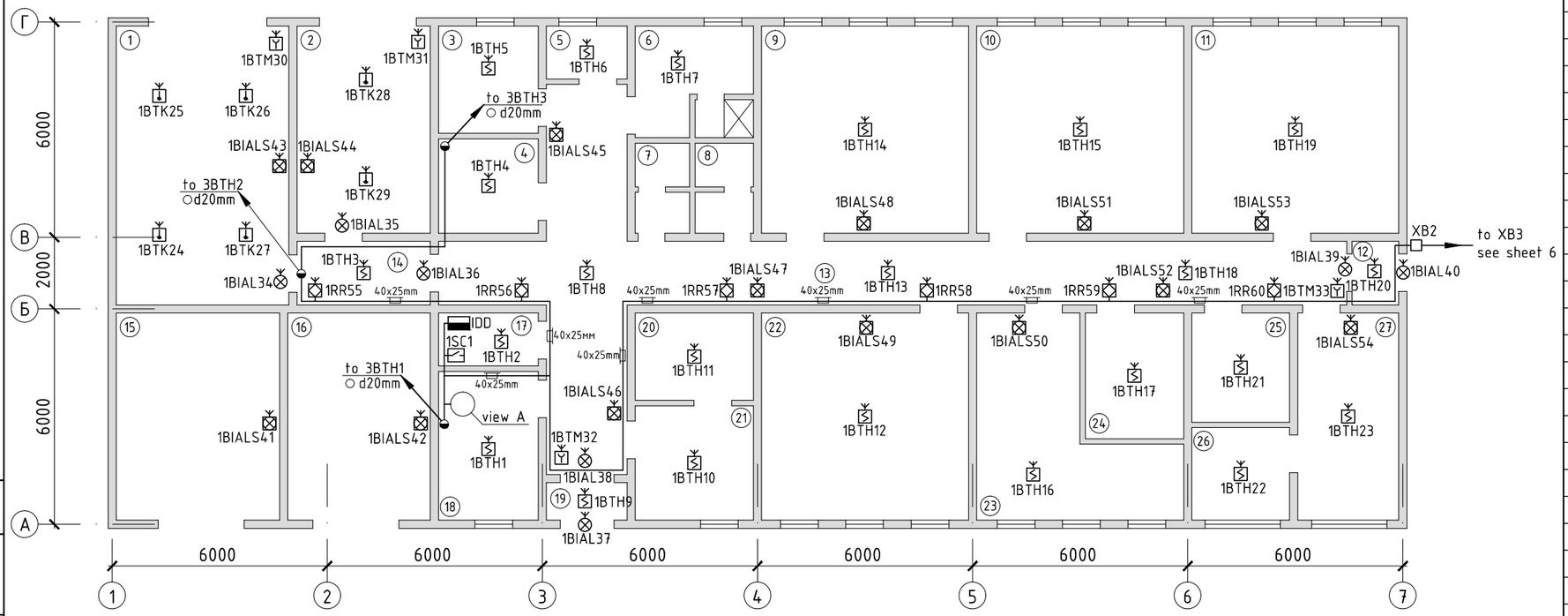
The Central Recording Fasility of IMS stations PS36/IS44

Fire alarm system. Automatic fire extinguishing system. Security alarm system	Stage	Sheet	Sheets
	D	1	9
Structural scheme			

Согласовано | Взам. подл. № | Подпись и дата | Инв. № подл.

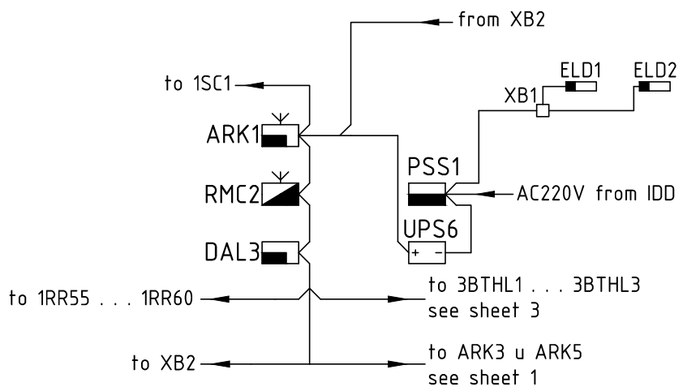
A3 format



Explication of premises

№	Name	Area, m2	Category premises for explosion and fire hazard
1	Box for car	42,4	B2
2	Box for car	28,8	B2
3	Locksmith	8,3	Д
4	Storeroom spare parts	7,1	B3
5	Storeroom	4,4	B3
6	Changing room with shower	12,0	
7	Toilet	3,9	
8	Toilet	3,9	
9	Dining room	35,8	
10	Engineering group	35,2	
11	Equipment room	35,7	
12	Entrance vestibule	2,5	
13	Corridor	70,1	
14	Corridor	6,7	
15	Diesel	29,5	B1
16	Boiler room	29,9	B1
17	Switchboard room	4,0	B3
18	Security post	14,1	
19	Entrance vestibule	2,3	
20	Storeroom spare parts	8,8	B3
21	Repair shop	13,4	
22	Support group	35,7	
23	Rest room for men	23,7	
24	Rest room for women	12,0	
25	Communication and data transmission cabinet	9,9	
26	Head of stations	8,8	
27	Head of monitoring groups	19,4	

View A



Installation instructions:

1. Insulators of the communication line Астра-А ИЛС and the conversion module МП 24/12V are conventionally not shown, see sheet 1.
2. Laying cable lines in a 40x25mm cable duct, lowering/lifting cables to peripheral devices – in a 25x16mm cable duct, unless otherwise specified.
3. Passing cables through walls, partitions and ceilings should be made in a smooth PVC pipe d20mm. Seal the passages with non-combustible material.

Chang	Party	Sheet	№ doc.	Signature	Date
Developed		Sinelnikov			03.21.
CPE		Sinelnikov			03.21.
Reg.control		Ivanov			03.21.

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The Central Recording Fasility of IMS stations PS36/IS44

Fire alarm system

Stage	Sheet	Sheets
D	2	

Layout of equipment and cable routes

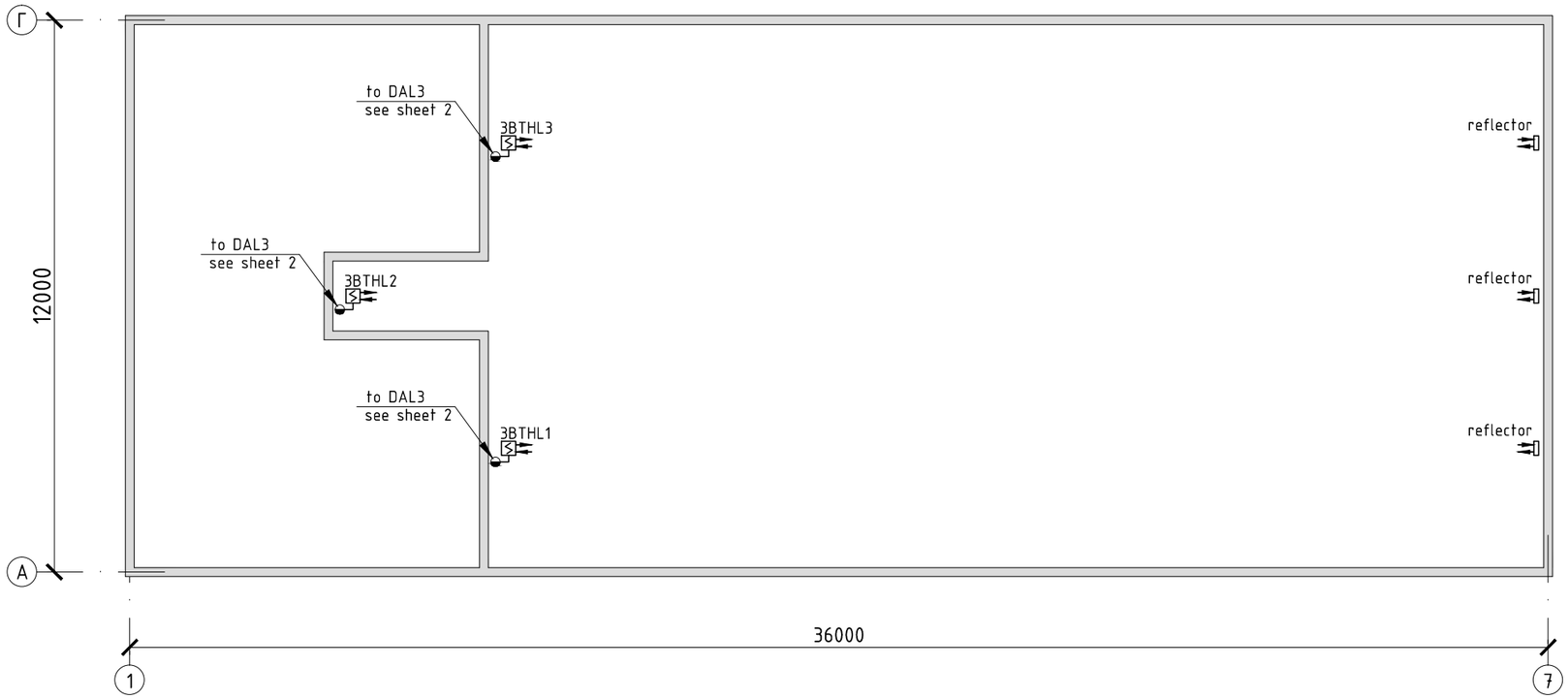
A3 format S 1:150

Согласовано

Взам. подл. №

Подпись и дата

Инв. № подл.



Installation instructions:
1. Place the remote device УВ-ПРД-ПРМ of the ИПДЛ-52CMD detector in the security room.
2. Lay the cable lines in a flexible corrugated PVC pipe d20mm.

Chang	Party	Sheet	№ doc.	Signature	Date
Developed		Sinelnikov			03.21.
CPE		Sinelnikov			03.21.
Reg.control		Ivanov			03.21.

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The Central Recording Fasility of IMS stations PS36/IS44

Fire alarm system	Stage	Sheet	Sheets
	D	3	

Layout of equipment and cable routes. Loft

A3 format S 1:150

Согласовано

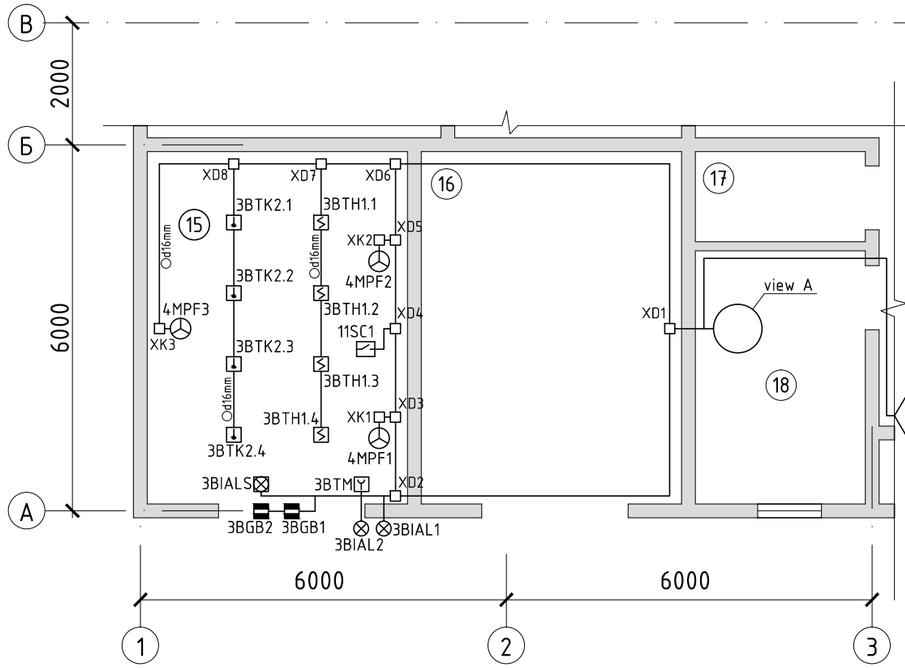
Взам. подл. №

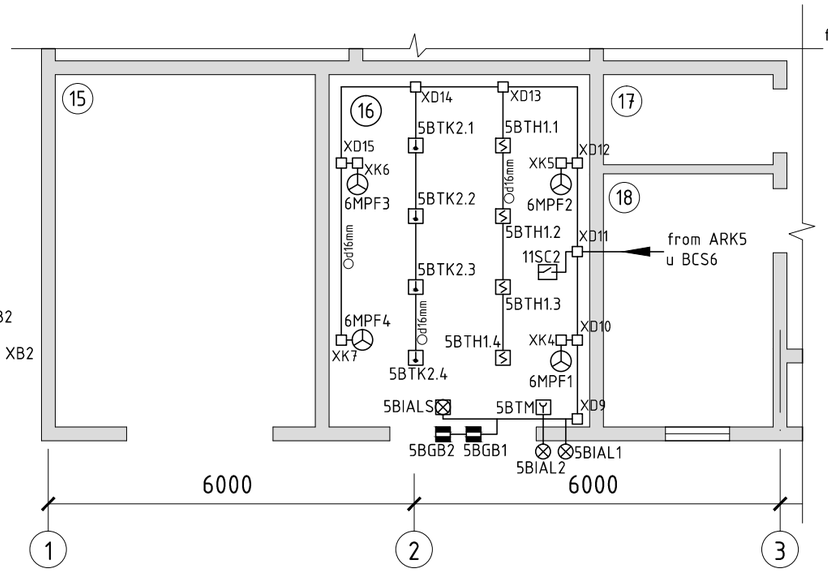
Подпись и дата

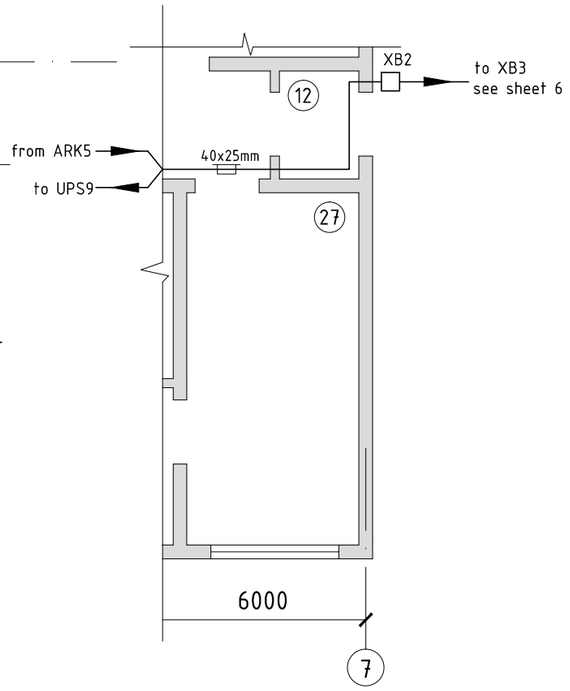
Инв. № подл.

Explication of premises

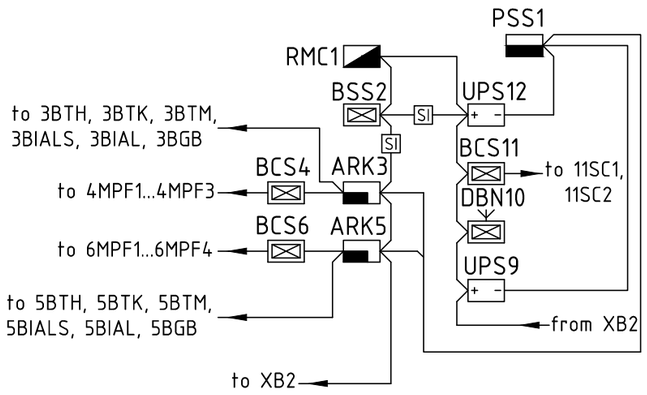
№	Name	Area, m2	Category premises for explosion and fire hazard
12	Entrance vestibule	2,5	
15	Diesel	29,5	B1
16	Boiler room	29,9	B1
17	Switchboard room	4,0	B3
18	Security post	14,1	
27	Head of monitoring groups	19,4	







View A



Installation instructions:

1. Install the Буран-8Н powder fire extinguishing modules on the wall at a height of 2.5-3.0 m.
2. Install fire detectors in each compartment of the cover.
3. Annunciators, marking 3BIALS and 5BIALS, apply with the inscription "Powder leave", annunciators, marking 3BIAL1 and 5BIAL1, apply with the inscription "Do not enter powder", annunciators, marking 3BIAL2 and 5BIAL2, apply with the inscription "Automation disabled".
4. Laying cable lines in the security post room in the cable channel 25x16mm and 40x25mm, in the diesel and boiler room in a flexible corrugated pipe d25mm, unless otherwise specified.
5. Passing cables through walls, partitions and ceilings should be made in a smooth PVC pipe d20mm. Seal the passages with non-combustible material.

Chang	Party	Sheet	№ doc.	Signature	Date
Developed		Sinelnikov			03.21.
CPE		Sinelnikov			03.21.
Reg.control		Ivanov			03.21.

311/2021-FS1

The Central Recording Fasility of IMS stations PS36/IS44

Automatic fire extinguishing system

Stage	Sheet	Sheets
D	4	

Layout of equipment and cable routes

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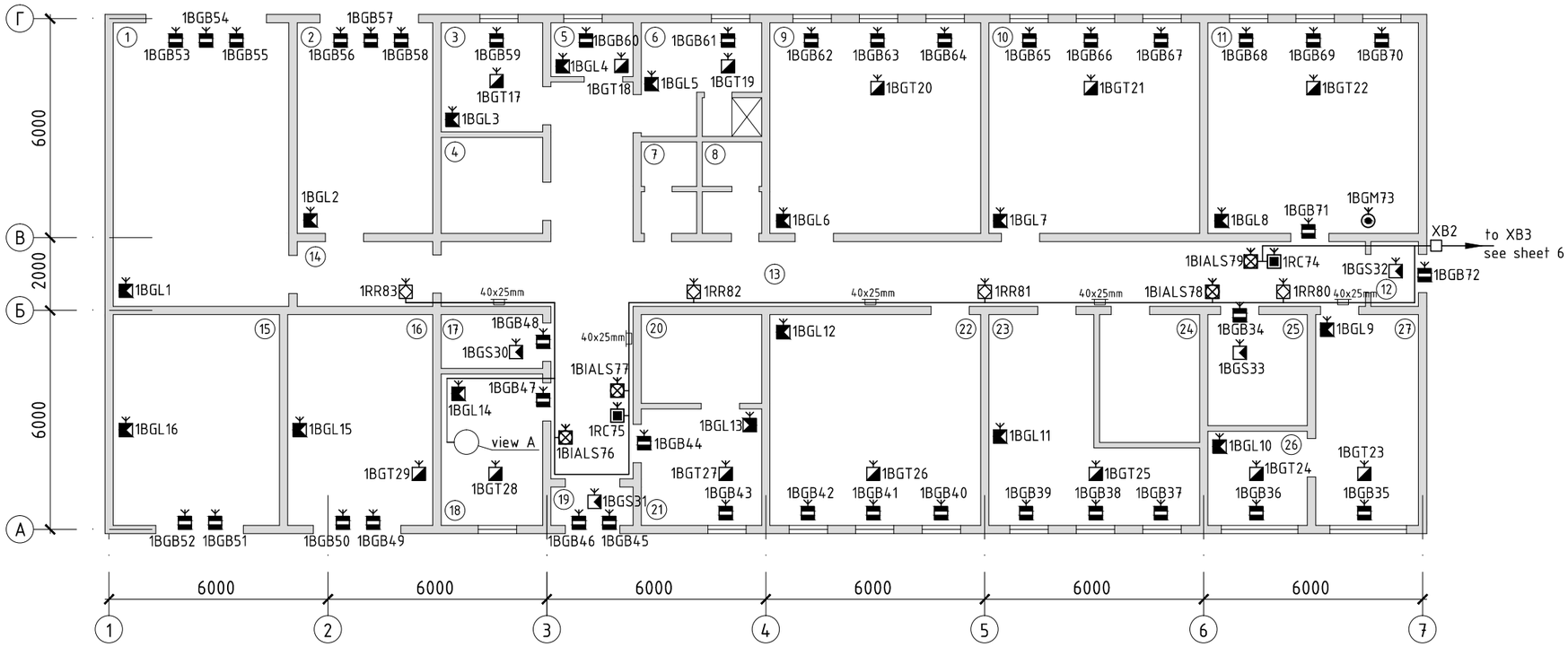
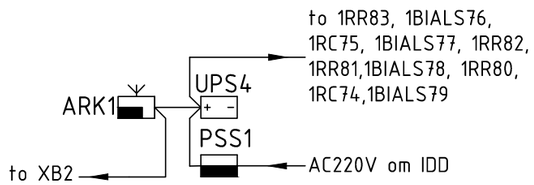
A3 format S 1:100



Explication of premises

№	Name	Area, m2	Category premises for explosion and fire hazard
1	Box for car	42,4	B2
2	Box for car	28,8	B2
3	Locksmith	8,3	Д
4	Storeroom spare parts	7,1	B3
5	Storeroom	4,4	B3
6	Changing room with shower	12,0	
7	Toilet	3,9	
8	Toilet	3,9	
9	Dining room	35,8	
10	Engineering group	35,2	
11	Equipment room	35,7	
12	Entrance vestibule	2,5	
13	Corridor	70,1	
14	Corridor	6,7	
15	Diesel	29,5	B1
16	Boiler room	29,9	B1
17	Switchboard room	4,0	B3
18	Security post	14,1	
19	Entrance vestibule	2,3	
20	Storeroom spare parts	8,8	B3
21	Repair shop	13,4	
22	Support group	35,7	
23	Rest room for men	23,7	
24	Rest room for women	12,0	
25	Communication and data transmission cabinet	9,9	
26	Head of stations	8,8	
27	Head of monitoring groups	19,4	

View A



Installation instructions:

1. Laying of cable lines should be done in a cable channel 40x25mm, lowering/raising cables to peripheral devices - in a cable channel 25x16mm.
2. The laying of the cable channel 40x25mm from the guard post to the vestibule, the XB2 box and the PSS shield are taken into account in the FAS section.
3. Passing cables through walls, partitions and ceilings should be made in a smooth PVC pipe d20mm. Seal the passages with non-combustible material.

Chang	Party	Sheet	№ doc.	Signature	Date
Developed		Sinelnikov			03.21.
CPE		Sinelnikov			03.21.
Reg.control		Ivanov			03.21.

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The Central Recording Fasility of IMS stations PS36/IS44

Security alarm system

Stage	Sheet	Sheets
D	5	

Layout of equipment and cable routes

A3 format S 1:150

Согласовано

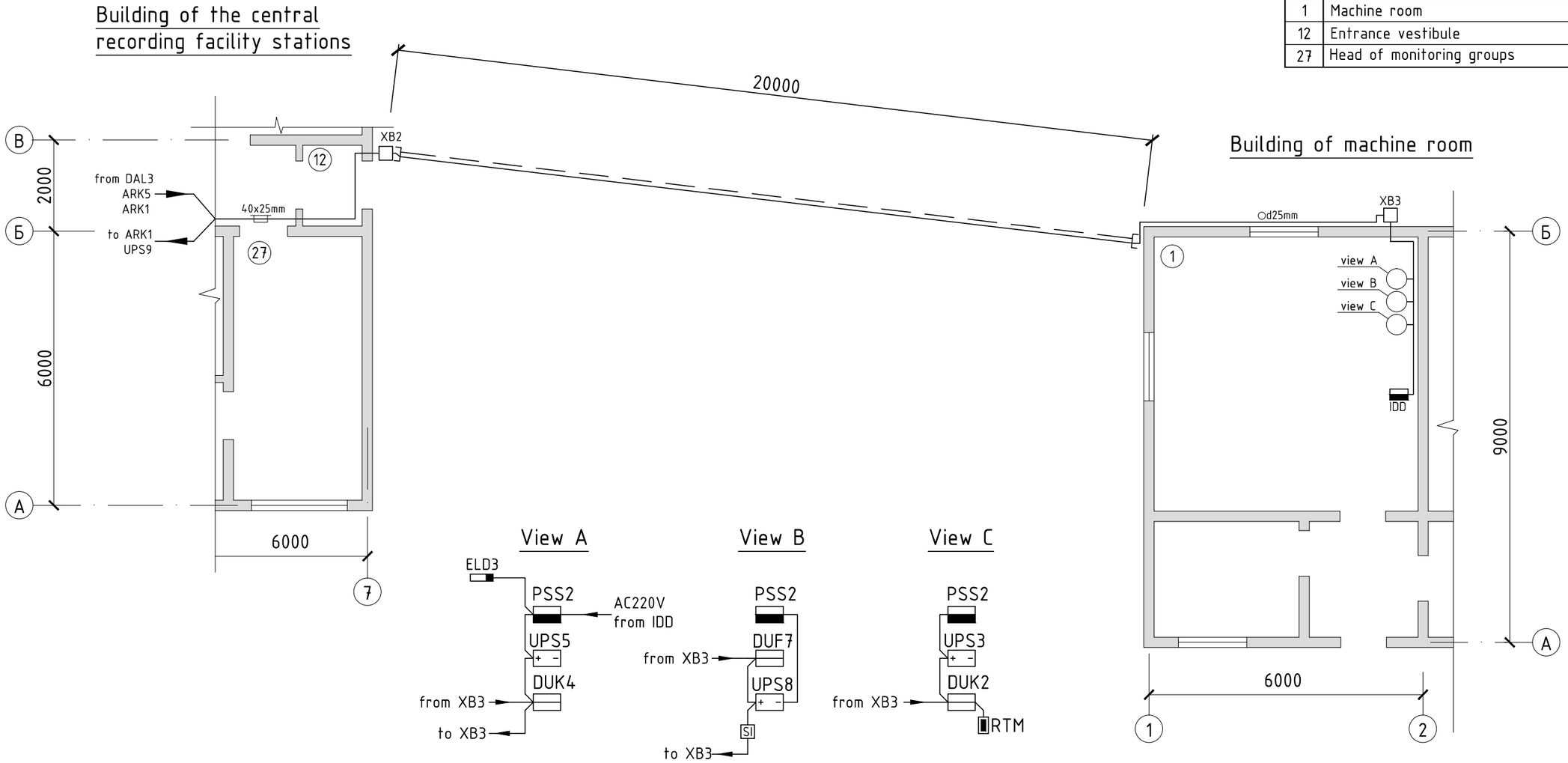
Взам. подл. №

Подпись и дата

Инв. № подл.

Экспликация помещений

Номер помещения	Наименование	Площадь, м2	Категория помещения по взрывопожарной и пожарной опасности
1	Machine room	34,8	
12	Entrance vestibule	2,5	
27	Head of monitoring groups	19,4	



Installation instructions:

1. Insulators of the communication line Астра-А ИЛС are conventionally not shown, see sheet 1.
2. The mounting box, marking XB3, should be installed below the floor level of the turbine hall.
3. Display unit Астра-863 исп. А with the Астра-А-ИЛС communication line insulator, marking DUK4, install on a metal mounting panel 450x450mm thick. 1mm.
4. Display unit С2000-ПТ with interface converter С2000-ПИ, marking DUF7 and SI, to be installed on a metal mounting panel 540x530mm thick. 1mm.
5. Display unit Астра-863 исп. Б with reader, marking DUK2 and RTM, to be installed on a metal mounting panel 450x450mm thick. 1mm.
6. Lay the external cable line from the station building to the turbine hall building with a suspension on the existing metal cable.
7. Laying of cable lines should be done in a cable channel 40x25mm, lowering/raising cables to peripheral devices - in a cable channel 25x16mm, unless otherwise specified.
8. Passing cables through walls, partitions and ceilings should be made in a smooth PVC pipe d20mm. Seal the passages with non-combustible material.

Chang	Party	Sheet	№ doc.	Signature	Date
Developed		Sinelnikov			03.21.
CPE		Sinelnikov			03.21.
Reg.control		Ivanov			03.21.

311/2021-FS1

The Central Recording Fasility of IMS stations PS36/IS44

Fire alarm system. Automatic fire extinguishing system. Security alarm system

Stage	Sheet	Sheets
D	6	

Layout of equipment and cable routes

Согласовано

Взам. подл. №

Подпись и дата

Инв. № подл.

Listofworkingdrawingsofthemainset

Sheet	Name	Note
7	Generaldata	
8	Equipmentconnectiondiagram(beginning)	
9	Equipmentconnectiondiagram(ending)	

Listofreferenceandattacheddocuments

Designations	Name	Note
	Attacheddocuments	
3112021-FS1.CR	Cablerecord	on5cheets
3112021-FS1.SE	Specificationofequipment,productsand	on10cheets
	materials	
3112021-FS1.SP	Sparepartskitlist	on2cheets
3112021-FS1. CA	Constructionassignmenttothecustomer	on1cheet

GENERAL INSTRUCTIONS

1. General data

This section of the working documentation provides for the creation of a fire alarm system (hereinafter referred to as FAS), automatic fire exstinguishing system (hereinafter referred to as AFES) and security alarm system (hereinafter referred to as SAS)) in the building of the central registration base of IMS stations PS36/IS44, located at the address: Kamchatka Krai, Elizovskiy Region, Nachiki.

2. Installation instructions

The installation of technical equipment, commissioning, testing and commissioning of the FAS, AFES and SAS shall be carried out in accordance with the requirements РД 78.145-93, СП 3.13130.2009, СП 5.13130.2009, СП 484.131500.2020, СП 485.131500.2020, СП 6.13130.2013, СП 76.13330.2016, СТО НОСТРОЙ 2.15.10-2011 and technical documentation for the equipment used.

Upon completion of installation, commissioning, testing and commissioning of the FAS, AFES and SAS, dismantle the existing FAS, AFES and SAS equipment.

When laying cable lines, follow the requirements of СП 6.13130.2013, СП 76.13330.2016, СП 256.1325800.2016 and ПУЭ.

Installation and commissioning of technical means of the AFES and FAS must be carried out by a specialized organization that has an appropriate permit (license).

Deviations from design documentation during installation are not allowed without agreement with the design organization - the project developer.

The maintenance, technical maintenance and scheduled preventive maintenance of the FAS, AFES and SAS shall be carried out in accordance with the requirements of ГОСТ Р 54101-2010.

3. Safety requirements

To work on installation and commissioning of technical means of FAS, AFES and SAS are allowed persons who have undergone safety instructions when working with electrical installations up to 1000V, who have a qualification group of at least 3 for the right to work in electrical installations with a voltage of up to 1000V and who have studied this project and technical documentation for the equipment that is part of the FAS, AFES and SAS.

When performing installation and commissioning of technical means of FAS, AFES and SAS, it is necessary to comply with the requirements of СНиП 12-03-2001, the Rules for labor protection during the operation of electrical installations, the Rules for the fire regime in the Russian Federation and technical documentation for the equipment used.

4. Environmental protection

This section of the working documentation was developed in compliance with sanitary standards and using equipment and materials that do not emit harmful substances into the environment and do not produce noise exceeding the permissible standards.

Equipment and materials offered for use in design documentation have certificates of conformity of the Russian Federation.

5. Normative and referenced documents

1. Federal Law of the Russian Federation of July 22, 2008 N 123-ФЗ "Technical regulations on fire safety requirements."
2. Decree of the Government of the Russian Federation of February 16, 2008 N 87 "On the composition of sections of project documentation and requirements for their content."
3. Decree of the Government of the Russian Federation of September 16, 2020 N 1479 "Rules of the fire regime in the Russian Federation."
4. ГОСТ Р 21.1101-2013 Basic requirements for design and working documentation.
5. ГОСТ 31565-2012 Cable products. Fire safety requirements.
6. ГОСТ Р 54101-2010 Automation and control systems. Security means and systems. Maintenance and running repairs.
7. СНиП 12-03-2001 Labor safety in construction.
8. СП 3.13130.2009 Fire protection systems. The system of warning and management of evacuation of people in case of fire. Fire safety requirements.
9. СП 5.13130.2009 Fire protection systems. Automatic fire alarm and extinguishing installations. Norms and rules of design.
10. СП 484.131500.2020 Fire protection systems. Fire alarm systems and automation of fire protection systems. Norms and rules of design.
11. СП 485.131500.2020 Fire protection systems. Automatic fire extinguishing installations. Norms and rules of design.
12. СП 486.131500.2020 Fire protection systems. The list of buildings, structures, premises and equipment to be protected by automatic fire extinguishing installations and fire alarm systems.
13. СП 6.13130.2013 Fire protection systems. Electrical equipment. Fire safety requirements.
14. СП 51.13330.2011 Noise protection.
15. СП 76.13330.2016 Electrical devices.
16. СП 256.1325800.2016 Electrical installations of residential and public buildings. Design and installation rules.
17. ПУЭ edition 7.
18. РД 78.145-93 Systems and complexes of security, fire and security and fire alarm systems. Rules for the production and acceptance of works.
19. Р 083-2019 Norms and rules for the design of security systems at facilities guarded (taken under protection) by non-departmental security units.
20. СТО НОСТРОЙ 2.15.10-2011 Security and fire alarm systems, warning and evacuation control systems, access control and management systems, security television systems. Installation, commissioning and commissioning.
21. Methodology for determining the calculated values of fire risk in buildings, structures and fire compartments of various classes of functional fire hazard (Order of the Ministry of Emergency Situations dated June 30, 2009 N 382).

Chang	Party	Sheet	№ doc.	Signature	Date
Developed		Sinelnikov			03.21.
CPE		Sinelnikov			03.21.
Reg.control		Ivanov			03.21.

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TheCentralRecordingFasilityofIMSstationsPS36IS44

Firealarmsystem.Automaticfire extinguishingsystem.Securityalarm system	Stage	Sheet	Sheets
	W	7	
Generaldata			

A3format

Согласовано

Взам. подл. №

Подпись и дата

Инв. № подл.

ELD1 ДПА-2104 AC220V L N
ELD2 ДПА-2104 AC220V L N
XB1 L N L N / L N L N
UPS6 РИП-24 исп. 06
XT2 1 2 3 4 5 6 K1 K2 K3
XT1 24V – 3 – 4 + 6 + 7
XP3 L N ⏚ AC220V
R1
M1
R1=3,9 кОм
IS Астра-А ИЛС L1 L2 A A B B + + – –
ARK1 Астра-8945 Pro
Цепь U1 GND
Цепь RELAY1 RELAY1
Цепь Zone1 GND Zone2
Цепь B1 B2 B3 B4
Цепь 485 A 485 B
Цепь OC1 OC2 OC3
RMC2 Астра-814 Pro
Цепь U1 GND
Цепь 485A 485B
1SC1 A1 A2 11 21 31 41 12 22 32 42 VS425
AC380V shut off ventilation
DAL3 Астра-713
Цепь 485A 485B
Цепь U1 GND
Цепь Zone1 GND Zone2 Zone3 GND Zone4 Zone5 GND Zone6 Zone7 GND Zone8
to 3BTHL1 3BTHL2 3BTHL3
to ARK3 ARK5 see sheet 9
МП 24/12 24V 12V GND GND
Zone1/2/3 GND K4 R1
BTHL 5 6 7 8 ИПДЛ-52СМД 4 3 2 1
УВ-ПРД-ПРМ 4 3 2 1
R1=3,9 кОм
1RR60 Астра-Z-8845 Цепь U1 GND
1BIALS59 Астра-Z-8845 Цепь U1 GND
1RR58 Астра-Z-8845 Цепь U1 GND
1RR57 Астра-Z-8845 Цепь U1 GND
1RR56 Астра-Z-8845 Цепь U1 GND
1RR55 Астра-Z-8845 Цепь U1 GND
PSS1 AB 1A B AB 3A B AB 3A B AB 10A B PH-111M L N neutral PE ground
AC220V AB10A IDD
XB2 1 2 3 4 5 6
XB3 1 2 3 4 5 6
IS Астра-А ИЛС L1 L2 A A B B + + – –
DUK4 Астра-863 исп. A
Цепь 485A 485B
Цепь Zone1 GND
Цепь U1 GND
UPS5 РИП-24 исп. 12
XT4 1 2 3 4 5 6 K1 K2 K3
XT3 24V – 1 – 2 + 3 + 4
R1
XP3 L N ⏚ AC220V
ELD3 L N AC220V ДПА-2104
PSS2 AB 1A B AB 3A B AB 3A B AB 10A B PH-111M L N neutral PE ground
AC220V AB10A IDD
UPS4 РИП-12 исп. 01
XT1 12V – 5 – 4 + 3 + 2 OK 1
XP1 L N ⏚ AC220V
R1
R1=3,9 кОм
ARK1 Астра-812 Pro
Цепь U1 GND
Цепь Zone1 GND Zone2
Цепь 485A 485B
1RR83 Астра-РИ-М РР Цепь U1 GND
1BIALS77 Астра-2331 Цепь U1 GND
1RR82 Астра-РИ-М РР Цепь U1 GND
1RR80 Астра-РИ-М РР Цепь U1 GND
1RC74 Астра-8131 Цепь U1 GND
1BIALS76 Астра-2331 Цепь U1 GND
1RC75 Астра-8131 Цепь U1 GND
1RR81 Астра-РИ-М РР Цепь U1 GND
1BIALS78 Астра-2331 Цепь U1 GND
1BIALS79 Астра-2331 Цепь U1 GND
RTM Считыватель-2 СЧ Общий Инф white black red
DUK2 Астра-863 исп. Б
Цепь 485A 485B
Цепь U1 GND
Цепь +TM -TM Out
Цепь Zone1 GND
UPS3 РИП-12 исп. 02
XT1 1 + 3 – 5 OK 12V
XP1 AC220V L N ⏚
R1=3,9 кОм

Chang	Party	Sheet	№ doc.	Signature	Date
Developed		Sinelnikov			03.21.
CPE		Sinelnikov			03.21.
Reg.control		Ivanov			03.21.

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The Central Recording Fasility of IMS stations PS36/IS44

Fire alarm system. Security alarm system	Stage	Sheet	Sheets
	W	8	

Equipment connection diagram (begining)

A3 format

Согласовано
Взам. подл. №
Подпись и дата
Инв. № подл.

RMC1
C2000-M
XT1.1: 1 +U; 2 0B
XT1.2: A 3; B 4
XT1.3: 5 TxD; 6 RxD; 7 GND

BSS2
C2000-СП1
XT1.2: 3 A; 4 B
XT1.3: NC1 5; COM1 6; NO1 7; NC2 8; COM2 9; NO2 10; NC3 11; COM3 12; NO3 13; NC4 14; COM4 15; NO4 16
XT1.1: 1 +U; 2 0B

SI
C2000-ПИ
XT1: 1 +U; 2 0B
XT3: A 1; B 2; 0B 3
XT2: A 1; B 2; 0B 3

PSS1
AB 3A B
L
N neutral
PE ground
AC220V
see sheet 8

SI
C2000-ПИ
XT1: 1 +U; 2 0B
XT3: A 1; B 2; 0B 3
XT2: A 1; B 2; 0B 3

UPS12
РИП-24 исп. 56
XT3: A 3; B 4
XT1: L; N; ⏚ AC220V
XT2: 24V; − 3; + 6; − 4; + 7; − 5; + 8

ARK3
C2000-АСПТ
XT1: L; N; ⏚ AC220V
R1=3,9 кОм
R2=4,7 кОм
ШС1 ШС2 ШС3 КЦ4 КЦ5: + − + − + − + − + − + 1 2 3 4 5 6 7
Неисп-равно-сть; Пожар; Управл. инж. оборуд.; 24В: 1 2 1 2 1 2 3 + −
Считы-ватель; RS485-1; RS485-2: И + ОВ A1 B1 A2 B2
Пуско-вая цепь; Табло уходи; Табло не входи; Табло Авт. откл.; Сирена: − + − + − + − + − +; П CO1 CO2 CO3 ЗО
3BTH1.4 . . . 3BTH1.1 to
3BTK1.4 . . . 3BTK1.1 to
3BTM to
3BGB2 . . . 3BGB1 to
DAL3 Zone 7 to see sheet 8
3BIALS to
3BIAL1 to
3BIAL2 to

ARK5
C2000-АСПТ
XT1: L; N; ⏚ AC220V
R1=3,9 кОм
R2=4,7 кОм
ШС1 ШС2 ШС3 КЦ4 КЦ5: + − + − + − + − + − + 1 2 3 4 5 6 7
Неисп-равно-сть; Пожар; Управл. инж. оборуд.; 24В: 1 2 1 2 1 2 3 + −
Считы-ватель; RS485-1; RS485-2: И + ОВ A1 B1 A2 B2
Пуско-вая цепь; Табло уходи; Табло не входи; Табло Авт. откл.; Сирена: − + − + − + − + − +; П CO1 CO2 CO3 ЗО
5BTH1.4 . . . 5BTH1.1 to
5BTK1.4 . . . 5BTK1.1 to
5BTM to
5BGB2 . . . 5BGB1 to
DAL3 Zone 8 to see sheet 8
5BIALS to
5BIAL1 to
5BIAL2 to

BTH: +IN +OUT IN/OUT
BTK: 5 2
R2=4,7 кОм, loop type 2

BCS4
C2000-КПБ
XT2.5: 9 A; 10 B
XT1.1: Вых.1− 1; Вых.1+ 2
XT1.2: Вых.2− 3; Вых.2+ 4
XT1.3: Вых.3− 5; Вых.3+ 6
XT1.4: Вых.4− 7; Вых.4+ 8
XT1.5: Вых.5− 9; Вых.5+ 10
XT1.6: Вых.6− 11; Вых.6+ 12
XT2.1: 1 +U; 2 0B
to 4MPF1
to 4MPF2
to 4MPF3

BCS6
C2000-КПБ
XT2.5: 9 A; 10 B
XT1.1: Вых.1− 1; Вых.1+ 2
XT1.2: Вых.2− 3; Вых.2+ 4
XT1.3: Вых.3− 5; Вых.3+ 6
XT1.4: Вых.4− 7; Вых.4+ 8
XT1.5: Вых.5− 9; Вых.5+ 10
XT1.6: Вых.6− 11; Вых.6+ 12
XT2.1: 1 +U; 2 0B
to 6MPF1
to 6MPF2
to 6MPF3
to 6MPF4

BCS11
C2000-КПБ
XT2.5: 9 A; 10 B
XT1.1: Вых.1− 1; Вых.1+ 2
XT1.2: Вых.2− 3; Вых.2+ 4
XT1.3: Вых.3− 5; Вых.3+ 6
XT1.4: Вых.4− 7; Вых.4+ 8
XT1.5: Вых.5− 9; Вых.5+ 10
XT1.6: Вых.6− 11; Вых.6+ 12
XT2.1: 1 +U; 2 0B
to 11SC1
to 11SC2

UPS9
РИП-12 исп. 54
XT2: A 3; B 4
XT3: 12V + 1; − 2; + 3; − 4
XT1: L; N; ⏚ AC220V

DBN10
УО-4С
1 +U; 2 0B
A 3; B 4

XB2
7 7; 8 8; 9 9; 10 10

SC
УК/ВК исп. 14
XT1: 1 УПР1−; 2 УПР1+; 3 УПР2−; 4 УПР3+
XT2: NC1 1; COM1 2; NO1 3; NC2 4; COM2 5; NO2 6
diesel shutdown
shutdown of boilers
reserve

BGB
R4=8,2 кОм
R2=4,7 кОм

BTM
R2=4,7 кОм

MPF
XK
МНП: red black; white black; R3
R3=91 Ом

МНП: red black; white black; BIALS: light sound
МНП: red black; white black; BIAL: light

XB3
7 7; 8 8; 9 9; 10 10

DUF7
C2000-ПТ
XT1: 1 +U; 2 0B
XT2: A 3; B 4

UPS8
РИП-24 исп. 50
XT2: A 3; B 4
XT3: 24V + 1; − 2; + 3; − 4
XT1: L; N; ⏚ AC220V

SI
C2000-ПИ
XT1: 1 +U; 2 0B
XT3: A 1; B 2; 0B 3
XT2: A 1; B 2; 0B 3

PSS2
AB 3A B
L
N neutral
PE ground
AC220V
see sheet 8

Согласовано

Взам. подл. №

Подпись и дата

Инв. № подл.

Chang	Party	Sheet	№ doc.	Signature	Date
Developed		Sinelnikov			03.21.
CPE		Sinelnikov			03.21.
Reg.control		Ivanov			03.21.

311/2021-FS1

The Central Recording Fasility of IMS stations PS36/IS44

Automatic fire extinguishing system

Stage	Sheet	Sheets
W	9	

Equipment connection diagram (ending)

A3 format

Обозначение кабеля	Трасса		Участок трассы	Кабель		Прокладка кабеля, м				Всего длина кабеля, м	Примечание
	Начало	Конец		Марка	Кол-во, число, сечение жил	открыто	в лотке, коробе	в трубе	на троссе		
Fire alarm system											
K1	ARK1	RMC2	security post	КИС-Внг(A)-FRLS	2x2x0,5	-	1	-	-	1	
K1	RMC2-IS	IS-DAL3	security post	КИС-Внг(A)-FRLS	2x2x0,5	-	1	-	-	1	
K1	DAL3-IS	XD2	security post/corridor	КИС-Внг(A)-FRLS	2x2x0,5	-	53	1	-	54	
K1	XD3	IS-DUK4	machine room	КИС-Внг(A)-FRLS	2x2x0,5	-	8	1	-	9	
K1	DUK4-IS	XD3	machine room	КИС-Внг(A)-FRLS	2x2x0,5	-	8	1	-	9	
K1	XD2	IS-ARK1	corridor/security post	КИС-Внг(A)-FRLS	2x2x0,5	-	55	1	-	56	
			Total:	КИС-Внг(A)-FRLS	2x2x0,5	-	126	4	-	130	
K2	XD2	XD3	building station/	U/UTP Cat5e PE	4x2x0,5	-	-	15	-	35	
			/building machine room								
			Total:	U/UTP Cat5e PE	4x2x0,5	-	-	15	20	35	
K3	UPS5	IS-DAL3	security post	КСРВнг(A)-FRLS	1x2x0,97	-	2	-	-	2	
K3	DAL3-IS	IS-RMC2	security post	КСРВнг(A)-FRLS	1x2x0,97	-	1	-	-	1	
K3	RMC2	ARK1-IS	security post	КСРВнг(A)-FRLS	1x2x0,97	-	1	-	-	1	
K3	UPS5	1RR55	security post/corridor	КСРВнг(A)-FRLS	1x2x0,97	-	21	-	-	21	
K3	1RR55	1RR56	corridor	КСРВнг(A)-FRLS	1x2x0,97	-	10	-	-	10	
K3	1RR56	1RR57	corridor	КСРВнг(A)-FRLS	1x2x0,97	-	21	-	-	21	
K3	1RR57	1RR58	corridor	КСРВнг(A)-FRLS	1x2x0,97	-	8	-	-	8	
K3	1RR58	1RR59	corridor	КСРВнг(A)-FRLS	1x2x0,97	-	8	-	-	8	
K3	1RR59	1RR60	corridor	КСРВнг(A)-FRLS	1x2x0,97	-	8	-	-	8	
K3	UPS6	IS-DUK4-IS	machine room	КСРВнг(A)-FRLS	1x2x0,97	-	2	-	-	2	
K3	ARK1	1SC1	security post/IDD	КСРВнг(A)-FRLS	1x2x0,97	-	3	5	-	8	
			Total:	КСРВнг(A)-FRLS	1x2x0,97	-	85	5	-	90	
K4	ARK1	UPS5	security post	КСРВнг(A)-FRLS	4x0,5	-	2	-	-	2	
K4	DUK4	UPS6	machine room	КСРВнг(A)-FRLS	4x0,5	-	2	-	-	2	
K4	DAL3	ЗВТНL1	security post/loft	КСРВнг(A)-FRLS	4x0,5	-	2	8	-	10	
K4	ЗВТНL1	УВ-ПРД-ПРМ	loft/security post	КСРВнг(A)-FRLS	4x0,5	-	2	8	-	10	
K4	DAL3	ЗВТНL2	security post/loft	КСРВнг(A)-FRLS	4x0,5	-	22	8	-	30	

Согласовано

Взам. подл. №

Подпись и дата

Инв. № подл.

Chang	Party	Sheet	№ doc.	Signature	Date
Developed		Sinelnikov			03.21
CPE		Sinelnikov			03.21
Reg.control		Ivanov			03.21

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Cable record

Stage	Sheet	Sheets
W	1	5

A4 format

Обозначение кабеля	Трасса		Участок трассы	Кабель		Прокладка кабеля, м				Всего длина кабеля, м	Примечание
	Начало	Конец		Марка	Кол-во, число, сечение жил	открыто	в лотке, коробе	в трубе	на троссе		
K4	ЗВТНL2	УВ-ПРД-ПРМ	loft/security post	КСРВнг(А)-FRLS	4х0,5	–	22	8	–	30	
K4	DAL3	ЗВТНL3	security post/loft	КСРВнг(А)-FRLS	4х0,5	–	32	8	–	40	
K4	ЗВТНL3	УВ-ПРД-ПРМ	loft/security post	КСРВнг(А)-FRLS	4х0,5	–	32	8	–	40	
K4	DAL3	ARK3-АУП	security post	КСРВнг(А)-FRLS	4х0,5	–	3	–	–	3	
K4	DAL3	ARK5-АУП	security post	КСРВнг(А)-FRLS	4х0,5	–	3	–	–	3	
			Total:	КСРВнг(А)-FRLS	4х0,5	–	122	48	–	170	
M1	IDD	PSS1	IDD/security post	ВВГнг(А)-FRLS	3х1,5	–	2	4	–	6	
M1	PSS1	UPS5	security post	ВВГнг(А)-FRLS	3х1,5	–	3	–	–	3	
M1	PSS1	XD1	security post	ВВГнг(А)-FRLS	3х1,5	–	1	–	–	1	
M1	XD1	ELD1	security post	ВВГнг(А)-FRLS	3х1,5	–	1	–	–	1	
M1	XD1	ELD2	security post	ВВГнг(А)-FRLS	3х1,5	–	1	–	–	1	
M1	IDD	PSS2	machine room	ВВГнг(А)-FRLS	3х1,5	–	12	–	–	12	
M1	PSS2	UPS6	machine room	ВВГнг(А)-FRLS	3х1,5	–	3	–	–	3	
M1	PSS2	ELD	machine room	ВВГнг(А)-FRLS	3х1,5	–	3	–	–	3	
			Total:	ВВГнг(А)-FRLS	3х1,5	–	26	4	–	30	
Automatic fire exstinguishig system											
K1	RMC1	BSS2	security post	КИС-Внг(А)-FRLS	2х2х0,5	–	1	–	–	1	
K1	BSS2	IS	security post	КИС-Внг(А)-FRLS	2х2х0,5	–	1	–	–	1	
K1	IS	ARK3	security post	КИС-Внг(А)-FRLS	2х2х0,5	–	1	–	–	1	
K1	ARK3	BCS4	security post	КИС-Внг(А)-FRLS	2х2х0,5	–	1	–	–	1	
K1	ARK3	ARK5	security post	КИС-Внг(А)-FRLS	2х2х0,5	–	1	–	–	1	
K1	ARK5	BCS6	security post	КИС-Внг(А)-FRLS	2х2х0,5	–	1	–	–	1	
K1	ARK5	XD2	security post/corridor	КИС-Внг(А)-FRLS	2х2х0,5	–	53	1	–	54	
K1	XD3	DUF7	machine room	КИС-Внг(А)-FRLS	2х2х0,5	–	7	1	–	8	
K1	DUF7	UPS8	machine room	КИС-Внг(А)-FRLS	2х2х0,5	–	2	–	–	2	
K1	UPS8	IS	machine room	КИС-Внг(А)-FRLS	2х2х0,5	–	2	–	–	2	
K1	IS	XD3	machine room	КИС-Внг(А)-FRLS	2х2х0,5	–	8	1	–	9	
K1	XD2	UPS9	corridor/security post	КИС-Внг(А)-FRLS	2х2х0,5	–	55	1	–	56	
K1	UPS9	DBN10	security post	КИС-Внг(А)-FRLS	2х2х0,5	–	2	–	–	2	
K1	DBN10	BCS11	security post	КИС-Внг(А)-FRLS	2х2х0,5	–	1	–	–	1	
K1	BCS11	UPS12	security post	КИС-Внг(А)-FRLS	2х2х0,5	–	2	–	–	2	
K1	UPS12	IS	security post	КИС-Внг(А)-FRLS	2х2х0,5	–	2	–	–	2	
K1	IS	BSS2	security post	КИС-Внг(А)-FRLS	2х2х0,5	–	1	–	–	1	

Согласовано

Взам. подл. №

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Chang	Party	Sheet	№ doc.	Signature	Date

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Sheet 2

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Обозначение кабеля	Трасса		Участок трассы	Кабель		Прокладка кабеля, м				Всего длина кабеля, м	Примечание
	Начало	Конец		Марка	Кол-во, число, сечение жил	открыто	в лотке, коробе	в трубе	на троссе		
			Total:	КИС-Внг(А)-FRLS	2х2х0,5	–	141	4	–	145	
К2	XD2	XD3	building station/	U/UTP Cat5e PE	4х2х0,5	–	–	15	–	35	
			/building machine room								
			Total:	U/UTP Cat5e PE	4х2х0,5	–	–	15	20	35	
К3	UPS8	DUF7	machine room	КСРВнг(А)-FRLS	1х2х0,97	–	2	–	–	2	
К3	DUF7	IS	machine room	КСРВнг(А)-FRLS	1х2х0,97	–	1	–	–	1	
К3	UPS9	DBN10	security post	КСРВнг(А)-FRLS	1х2х0,97	–	2	–	–	2	
К3	UPS12	RMC1	security post	КСРВнг(А)-FRLS	1х2х0,97	–	2	–	–	2	
К3	UPS12	IS	security post	КСРВнг(А)-FRLS	1х2х0,97	–	2	–	–	2	
К3	IS	BSS2	security post	КСРВнг(А)-FRLS	1х2х0,97	–	1	–	–	1	
К3	BSS2	IS	security post	КСРВнг(А)-FRLS	1х2х0,97	–	1	–	–	1	
К3	IS	BCS4	security post	КСРВнг(А)-FRLS	1х2х0,97	–	1	–	–	1	
К3	BCS4	BCS6	security post	КСРВнг(А)-FRLS	1х2х0,97	–	1	–	–	1	
К3	UPS12	BCS11	security post	КСРВнг(А)-FRLS	1х2х0,97	–	2	–	–	2	
К3	BCS11	11SC1	security post/boiler room	КСРВнг(А)-FRLS	1х2х0,97	–	2	5	–	7	
К3	ARK3	3BIALS	security post/boiler room	КСРВнг(А)-FRLS	1х2х0,97	–	2	8	–	10	
К3	ARK3	3BIAL1	security post/boiler room	КСРВнг(А)-FRLS	1х2х0,97	–	2	12	–	14	
К3	ARK3	3BIAL2	security post/boiler room	КСРВнг(А)-FRLS	1х2х0,97	–	2	13	–	15	
К3	BCS11	11SC2	security post/diesel	КСРВнг(А)-FRLS	1х2х0,97	–	2	17	–	19	
К3	ARK5	5BIALS	security post/diesel	КСРВнг(А)-FRLS	1х2х0,97	–	2	14	–	16	
К3	ARK5	5BIAL1	security post/diesel	КСРВнг(А)-FRLS	1х2х0,97	–	2	17	–	19	
К3	ARK5	5BIAL2	security post/diesel	КСРВнг(А)-FRLS	1х2х0,97	–	2	18	–	20	
			Total:	КСРВнг(А)-FRLS	1х2х0,97	–	31	104	–	135	
К4	BCS4	4MPF1	security post/boiler room	КСРВнг(А)-FRLS	1х2х1,38	–	2	5	–	7	
К4	BCS4	4MPF2	security post/boiler room	КСРВнг(А)-FRLS	1х2х1,38	–	2	5	–	7	
К4	BCS4	4MPF3	security post/boiler room	КСРВнг(А)-FRLS	1х2х1,38	–	2	14	–	16	
К4	BCS4	4MPF4	security post/boiler room	КСРВнг(А)-FRLS	1х2х1,38	–	2	17	–	19	
К4	BCS6	6MPF1	security post/diesel	КСРВнг(А)-FRLS	1х2х1,38	–	2	19	–	21	
К4	BCS6	6MPF2	security post/diesel	КСРВнг(А)-FRLS	1х2х1,38	–	2	14	–	16	
К4	BCS6	6MPF3	security post/diesel	КСРВнг(А)-FRLS	1х2х1,38	–	2	22	–	24	
			Total:	КСРВнг(А)-FRLS	1х2х1,38		14	96		110	
К5	ARK3	3BTH1.1...3BTH1.4	security post/boiler room	КСРВнг(А)-FRLS	4х0,5	–	2	21	–	23	
К5	ARK3	3BTK2.1...3BTK2.4	security post/boiler room	КСРВнг(А)-FRLS	4х0,5	–	2	23	–	25	

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Обозначение кабеля	Трасса		Участок трассы	Кабель		Прокладка кабеля, м				Всего длина кабеля, м	Примечание
	Начало	Конец		Марка	Кол-во, число, сечение жил	открыто	в лотке, коробе	в трубе	на троссе		
K5	ARK3	3BTM1	security post/boiler room	КСРВнг(А)-FRLS	4х0,5	–	2	8	–	10	
K5	ARK3	3BGB1...3BGB2	security post/boiler room	КСРВнг(А)-FRLS	4х0,5	–	2	11	–	13	
K5	ARK5	5BTH1.1...5BTH1.4	security post/diesel	КСРВнг(А)-FRLS	4х0,5	–	2	26	–	28	
K5	ARK5	5BTK2.1...5BTK2.4	security post/diesel	КСРВнг(А)-FRLS	4х0,5	–	2	28	–	30	
K5	ARK5	5BTM1	security post/diesel	КСРВнг(А)-FRLS	4х0,5	–	2	15	–	17	
K5	ARK5	5BGB1...5BGB2	security post/diesel	КСРВнг(А)-FRLS	4х0,5	–	2	17	–	19	
			Total:	КСРВнг(А)-FRLS	4х0,5	–	16	149	–	165	
M1	PSS1	ARK3	security post	ВВГнг(А)-FRLS	3х1,5	–	3	–	–	3	
M1	PSS1	ARK5	security post	ВВГнг(А)-FRLS	3х1,5	–	4	–	–	4	
M1	PSS1	UPS9	security post	ВВГнг(А)-FRLS	3х1,5	–	5	–	–	5	
M1	PSS1	UPS12	security post	ВВГнг(А)-FRLS	3х1,5	–	5	–	–	5	
M1	PSS2	UPS8	machine room	ВВГнг(А)-FRLS	3х1,5	–	3	–	–	3	
			Total:	ВВГнг(А)-FRLS	3х1,5	–	20	–	–	20	
	4MPF1	grounding	boiler room	ПуВнг(А)-LS	1х2,5	5	–	–	–	5	
	4MPF2	grounding	boiler room	ПуВнг(А)-LS	1х2,5	5	–	–	–	5	
	4MPF3	grounding	boiler room	ПуВнг(А)-LS	1х2,5	12	–	–	–	12	
	4MPF4	grounding	boiler room	ПуВнг(А)-LS	1х2,5	15	–	–	–	15	
	6MPF1	grounding	diesel	ПуВнг(А)-LS	1х2,5	5	–	–	–	5	
	6MPF2	grounding	diesel	ПуВнг(А)-LS	1х2,5	5	–	–	–	5	
	6MPF3	grounding	diesel	ПуВнг(А)-LS	1х2,5	13	–	–	–	13	
	X1	grounding	boiler room	ПуВнг(А)-LS	1х2,5	5	–	–	–	5	
	X2	grounding	boiler room	ПуВнг(А)-LS	1х2,5	5	–	–	–	5	
	X3	grounding	boiler room	ПуВнг(А)-LS	1х2,5	12	–	–	–	12	
	X4	grounding	boiler room	ПуВнг(А)-LS	1х2,5	15	–	–	–	15	
	X5	grounding	diesel	ПуВнг(А)-LS	1х2,5	5	–	–	–	5	
	X6	grounding	diesel	ПуВнг(А)-LS	1х2,5	5	–	–	–	5	
	X7	grounding	diesel	ПуВнг(А)-LS	1х2,5	13	–	–	–	13	
			Total:	ПуВнг(А)-LS	1х2,5	120	–	–	–	120	
Security alarm system											
K2	XD2	XD3	building station/	U/UTP Cat5e PE	4х2х0,5	–	–	15	–	35	
			/building machine room								
			Total:	U/UTP Cat5e PE	4х2х0,5	–	–	15	20	35	
K6	ARK1	XD2	security post/corridor	КИС-Внг(А)-LS	2х2х0,60	–	54	1	–	55	

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Обозначение кабеля	Трасса		Участок трассы	Кабель		Прокладка кабеля, м				Всего длина кабеля, м	Примечание
	Начало	Конец		Марка	Кол-во, число, сечение жил	открыто	в лотке, коробе	в трубе	на троссе		
K6	XD3	DUK2	machine room	КИС-Внг(А)-LS	2x2x0,60		10			10	
			Total:	КИС-Внг(А)-LS	2x2x0,60	-	64	1	-	65	
K7	UPS3	ARK1	security post	КСВВнг(А)-LS	1x2x0,97	-	2	-	-	2	
K7	UPS3	1RR83	security post/corridor	КСВВнг(А)-LS	1x2x0,97	-	14	1	-	15	
K7	1RR83	1BIALS76	corridor	КСВВнг(А)-LS	1x2x0,97	-	9	-	-	9	
K7	1BIALS76	1RC75	corridor	КСВВнг(А)-LS	1x2x0,97	-	8	-	-	8	
K7	1RC75	1BIALS77	corridor	КСВВнг(А)-LS	1x2x0,97	-	2	-	-	2	
K7	1BIALS77	1RR82	corridor	КСВВнг(А)-LS	1x2x0,97	-	7	-	-	7	
K7	1RR82	1RR81	corridor	КСВВнг(А)-LS	1x2x0,97	-	11	-	-	11	
K7	1RR81	1BIALS78	corridor	КСВВнг(А)-LS	1x2x0,97	-	8	-	-	8	
K7	1BIALS78	1RR80	corridor	КСВВнг(А)-LS	1x2x0,97	-	4	-	-	4	
K7	1RR80	1RC74	corridor	КСВВнг(А)-LS	1x2x0,97	-	10	-	-	10	
K7	1RC74	1BIALS79	corridor	КСВВнг(А)-LS	1x2x0,97	-	2	-	-	2	
K7	UPS3	DUK2	machine room	КСВВнг(А)-LS	1x2x0,97	-	2	-	-	2	
			Total:	КСВВнг(А)-LS	1x2x0,97	-	79	1	-	80	
K8	ARK1	UPS3	security post	КСВВнг(А)-LS	4x0,5	-	2	-	-	2	
K8	DUK2	UPS4	machine room	КСВВнг(А)-LS	4x0,5	-	2	-	-	2	
K8	DUK2	Считыватель-2	machine room	КСВВнг(А)-LS	4x0,5	-	1	-	-	1	
			Total:	КСВВнг(А)-LS	4x0,5	-	5	-	-	5	
M2	PSS1	UPS3	security post	ВВГнг(А)-LS	3x1,5	-	2	-	-	2	
M2	PSS2	UPS4	machine room	ВВГнг(А)-LS	3x1,5	-	3	-	-	3	
			Total:	ВВГнг(А)-LS	3x1,5	-	5	-	-	5	

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Symbol	Name and specifications	Type, brand, designation of the document, questionnaire	Product code	Manufacturer	Unit of measu-rement	Qty	Weight 1 unit, kg	Note
	Fire alarm system							
	Equipment							
ARK	1. Fire alarm control panel	Астра-8945 Pro		ТЭКО	pcs.	1		
	2. Communication module	Астра-GSM (ПАК Астра)		ТЭКО	pcs.	1		
	3. Interface module	Астра-RS-485		ТЭКО	pcs.	1		
RMC	4. Monitoring and control panel	Астра-814 Pro		ТЭКО	pcs.	1		
DUK	5. Display unit	Астра-863 исп. А		ТЭКО	pcs.	1		
RR	6. Radio channel repeater router	Астра-Z-8845		ТЭКО	pcs.	6		
DAL	7. Expander of alarm loops	Астра-713		Болид	pcs.	1		
IS	8. Communication line isolator	Астра-А ИЛС		ТЭКО	pcs.	6		
UPS5	9. Redundant power supply	РИП-24 исп. 12		Болид	pcs.	1		
UPS6	10. Redundant power supply	РИП-24 исп. 06		Болид	pcs.	1		
BTH	11. Optical-electronic smoke detector radio channel	Астра-Z-4245		ТЭКО	pcs.	23		
BTHL	12. Optical-electronic linear fire detector, range 8-60m	ИПДЛ-52СМД		ИВС	pcs.	3		

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Developed		Sinelnikov			03.21
CPE		Sinelnikov			03.21
Reg.control		Ivanov			03.21

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Specification of equipment, products and materials

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Symbol	Name and specifications	Type, brand, designation of the document, questionnaire	Product code	Manufacturer	Unit of measu-rement	Qty	Weight 1 unit, kg	Note
BTK	13. Maximum differential radio channel fire detector	Астра-Z-4345		ТЭКО	pcs.	6		
BTM	14. Manual radio channel fire detector	Астра-Z-4545		ТЭКО	pcs.	4		
BIAL	15. Radio channel fire warning light	Астра-Z-2745		ТЭКО	pcs.	7		
BIALS	16. Combined radio channel fire alarm	Астра-Z-2345		ТЭКО	pcs.	14		
SC	17. Modular contactor, 440V/25 A, 4NC, AC/DC 24V	VS425-04		ELKO EP	pcs.	1		
	Materials and installation products							
	1. Interface box	Астра-984		ТЭКО	pcs.	1		
	2. Tester	ИПДЛ-52		ИВС	pcs.	1		
	3. Converter module	МП 24/12В		Болид	pcs.	1		
	4. Storage battery, 12V/7 Axh	DTM1207		Delta	pcs.	2		
	5. Storage battery, 12V/26 Axh	DTM1226		Delta	pcs.	2		
	6. Emergency lamp	ДПА-2104		IEK	pcs.	3		
PSS1	7. Modular box, 12 mod., wall	ЩРН-П-12		IEK	pcs.	1		
PSS2	8. distribution case, 9 mod., wall	ЩРн-9з-1		IEK	pcs.	1		
	9. Voltage relay AC 220V/16A	РН-111М		Новатек Электро	pcs.	2		

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Symbol	Name and specifications	Type, brand, designation of the document, questionnaire	Product code	Manufacturer	Unit of measu-rement	Qty	Weight 1 unit, kg	Note
	10. Circuit breaker, 10A	BA47-29-1P 10A B		IEK	pcs.	4		
	11. Circuit breaker, 3A	BA47-29-1P 3A B		IEK	pcs.	2		
	12. Circuit breaker, 1A	BA47-29-1P 1A B		IEK	pcs.	2		
	13. Bus N on DIN insulator	ШНИ 6Х9-8		IEK	pcs.	1		
	14. Bus N on DIN insulator	ШНИ 6Х9-12		IEK	pcs.	1		
	15. Bus PEN on DIN insulator	ШНИ 6Х9-8		IEK	pcs.	1		
	16. Bus PEN on DIN insulator	ШНИ 6Х9-12		IEK	pcs.	1		
	17. Connecting bus, PIN, 8, 1P, 63A			IEK	pcs.	1		
	18. Connecting bus, PIN, 12, 1P, 63A			IEK	pcs.	1		
	19. Cable channel, Elecor, 25x16mm			IEK	m	30		
	20. Fittings for cable channel, Elecor, 25x16mm			IEK	pcs.	10		
	21. Cable channel, Elecor, 40x25mm			IEK	m	70		
	22. Fittings for cable channel, Elecor, 40x25mm			IEK	pcs.	22		
	23. Corrugated PVC pipe, d = 20mm, gray			IEK	m	33		
	24. Corrugated HPP pipe, d = 25mm, black			IEK	m	15		
	25. Smooth PVC pipe, d = 20mm, gray, L = 2m			IEK	pcs.	2		

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Symbol	Name and specifications	Type, brand, designation of the document, questionnaire	Product code	Manufacturer	Unit of measu-rement	Qty	Weight 1 unit, kg	Note
	26. Single-leg bracket, galvanized steel	СМО 19-20		Fortisflex	pack	2		pack 100 pcs.
	27. Two-leg bracket, galvanized steel	СМД 25-26		Fortisflex	pack	1		pack 100 pcs.
	28. Suspension for attaching the cable to the rope	ПКТ		Fortisflex	pack	1		pack 100 pcs.
XB1	29. Mounting box, 75x75x20mm, 6x6,0mm2	КМ41212-01		IEK	pcs.	1		
XB2, XB3	30. Mounting box, 150x110x85mm, 5xPG11, IP55	КМ41331		IEK	pcs.	2		
	31. Contact screw clamp, 1,0-2,5mm3	ЗВИ-3		IEK	pcs.	2		
	32. Mounting metal sheet 450x450mm, thick. 1mm				pcs.	1		
	33. Fire-resistant assembly foam, cylinder gun	SOUDAFOAM FR		SOUDAL	pcs.	1		
	Cable production							
K1	1. Cable RS485, cross-section 2x2x0.5mm	КИС-РВнг(А)-FRLS		Паритет	m	130		
K2	2. LAN cable, outdoor, сеч. 4x2x0,52мм	ParLan U/UTP Cat5e PE		Паритет	m	35		
K3	3. Cable for signaling systems, cross-section 1x2x0.97mm	КСРВнг(А)-FRLS		Паритет	m	90		
K4	4. Cable for signaling systems, cross-section 4x0.5mm	КСРВнг(А)-FRLS		Паритет	m	170		
M1	5. Power cable, cross-section 3x1.5mm2	ВВГнг(А)-FRLS		Спецкабель	m	30		
								заземление

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Symbol	Name and specifications	Type, brand, designation of the document, questionnaire	Product code	Manufacturer	Unit of measu-rement	Qty	Weight 1 unit, kg	Note
	Automatic fire extinguishing system							
	Equipment							
RMC	1. Control panel	C2000M		Болид	pcs.	1		
ARK	2. Control unit and control unit for automatic fire extinguishing means	C2000-АСПТ		Болид	pcs.	2		
BCS	3. Control and starting unit	C2000-КПБ		Болид	pcs.	3		
DUF	4. Fire extinguishing system indication unit	C2000-ПТ		Болид	pcs.	1		
DBN	5. Terminal device for the transmission of notifications via GSM cellular communication channels	УО-4С исп. 02		Болид	pcs.	1		
BSS	6. Signal and starting unit	C2000-СП1		Болид	pcs.	1		
SI	7. Repeater of interfaces RS485	C2000-ПИ		Болид	pcs.	3		
SC	8. Switching device	УК/ВК исп. 14		Болид		2		
UPS8	9. Redundant power supply	РИП-24 исп. 50		Болид	pcs.	1		
UPS9	10. Redundant power supply	РИП-12 исп. 54		Болид	pcs.	1		
UPS12	11. Redundant power supply	РИП-24 исп. 56		Болид	pcs.	1		
MPF	12. Powder extinguishing module МПП(р)-8Н-И-ГЭ-УХЛ2,5	Буран-8Н		Элотос	pcs.	7		

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Symbol	Name and specifications	Type, brand, designation of the document, questionnaire	Product code	Manufacturer	Unit of measu-rement	Qty	Weight 1 unit, kg	Note
BTH	13. Optical-electronic smoke fire detector	ДИП-31		Болид	pcs.	8		
BTK	14. Combined gas and heat fire detector	СОнет		Болид	pcs.	8		
	ИП435-8/101-04-A1R							
BTM	15. Remote start device	УДП513-3М		Болид	pcs.	2		
BGB	16. Magnetic contact point detector	ИО102-20 А2П В		Комплекстройсервис	pcs.	4		
BIALS	17. Combined fire alarm "Powder go away"	КОП-25П(С)		Системсервис	pcs.	2		
BIAL	18. Fire alarm light "Do not enter powder", IP54	КОП-25П		Системсервис	pcs.	2		
	надписью "Порошок не входи",							
BIAL	19. Fire alarm light "Automation off", IP54	КОП-25П		Системсервис	pcs.	2		
	Materials and installation products							
	1. Interface converter	USB-RS485		Болид	pcs.	1		
	2. Storage battery, 12V/5 Axh	DTM1205		Delta	pcs.	4		
	3. Storage battery, 12V/7 Axh	DTM1207		Delta	pcs.	3		
	4. Storage battery, 12V/26 Axh	DTM1226		Delta	pcs.	2		
	5. Circuit breaker, 3A	ВА47-29-1P 3A B		IEK	pcs.	5		
	6. Key Touch Memory	DS-1990A		Dallas	pcs.	4		

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Symbol	Name and specifications	Type, brand, designation of the document, questionnaire	Product code	Manufacturer	Unit of measu-rement	Qty	Weight 1 unit, kg	Note
	7. Cable channel, Elecor, 25x16mm			IEK	м	20		
	8. Fittings for cable channel, Elecor, 25x16mm			IEK	pcs.	10		
	9. Cable channel, Elecor, 40x25mm			IEK	m	6		
	10. Fittings for cable channel, Elecor, 40x25mm			IEK	pcs.	3		
	11. Corrugated PVC pipe, d = 16mm, gray			IEK	m	120		
	12. Corrugated PVC pipe, d = 25mm, gray			IEK	m	60		
	13. Single-leg bracket, galvanized steel	CMO 8-9		Fortisflex	pack	6		pack 100 pcs.
	14. Single-leg bracket, galvanized steel	CMO 16-17		Fortisflex	pack	6		pack 100 pcs.
	15. Single-leg bracket, galvanized steel	CMO 25-26		Fortisflex	pack	3		pack 100 pcs.
	16. Smooth PVC pipe, d = 20mm, gray, L = 2m			IEK	pcs.	3		
XK	17. Mounting box, fireproof, 86x86x62mm, IP54	KM-O-(8к)-IP54-0808		Гефест	pcs.	7		
XD	18. Mounting box, 100x100x50mm, IP55	KM41234		IEK	pcs.	15		
	19. Metal oxide resistor, 91 Ohm, 2 W, + 5%	C2-23			pcs.	7		
	20. Grounding bus, 483x25x3mm, copper, 12 points, M6	ШМТ		ITK	pcs.	2		
	21. Mounting metal sheet 540x530mm, thick. 1mm				pcs.	1		
	22. Fire-resistant assembly foam, cylinder gun	SOUDAFOAM FR		SOUDAL	pcs.	1		

Согласовано

Взам. подл. №

Подпись и дата

Инв. № подл.

Symbol	Name and specifications	Type, brand, designation of the document, questionnaire	Product code	Manufacturer	Unit of measu-rement	Qty	Weight 1 unit, kg	Note
	Cable production							
K1	1. Cable RS485, cross-section 2x2x0.5mm	КИС-РВнг(А)-FRLS		Паритет	m	145		
K2	2. LAN cable, outdoor, сеч. 4x2x0,52мм	ParLan U/UTP Cat5e PE		Паритет	m	35		
K3	3. Cable for signaling systems, cross-section 1x2x0.97mm	КСРВнг(А)-FRLS		Паритет	m	135		
K4	4. Cable for signaling systems, cross-section 1x2x1.38mm	КСРВнг(А)-FRLS		Паритет	m	110		
K5	5. Cable for signaling systems, cross-section 4x0.5mm	КСРВнг(А)-FRLS		Паритет	m	165		
M1	6. Power cable, cross-section 3x1.5mm2	ВВГнг(А)-FRLS		Спецкабель	m	20		
	7. Installation wire, green-yellow, cross-section. 1x2.5mm2	ПуВнг(А)-LS		Електрокабель	m	120		grounding

Согласовано

Взам. подл. №

Подпись и дата

Инв. № подл.

Chang	Party	Sheet	№ doc.	Signature	Date

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Sheet 8

A4 format

Symbol	Name and specifications	Type, brand, designation of the document, questionnaire	Product code	Manufacturer	Unit of measu-rement	Qty	Weight 1 unit, kg	Note
	Security alarm system							
	Equipment							
ARK	1. Fire alarm control panel	Астра-812 Pro		ТЭКО	pcs.	1		
	2. Communication module	Астра-GSM (ПАК Астра)		ТЭКО	pcs.	1		
DUK	3. Display unit	Астра-863 исп. Б		ТЭКО	pcs.	1		
	4. Reader Touch Memory	Считыватель-2		Болид	pcs.	1		
RR	5. Radio expander	Астра-РИ-М РР		ТЭКО	pcs.	4		
RC	6. Radio channel control panel	Астра-8131		ТЭКО	pcs.	2		
UPS3	7. Redundant power supply	РИП-12 исп. 02		Болид	pcs.	1		
UPS4	8. Redundant power supply	РИП-12 исп. 01		Болид	pcs.	1		
	9. Battery box	Бокс-12 исп. 0		Болид	pcs.	1		
BGL	10. Surround security detector optoelectronic passive	Астра-5131 исп. А		ТЭКО	pcs.	16		
	radio channel							
BGS	11. Surface security detector optoelectronic passive	Астра-5131 исп. Ш		ТЭКО	pcs.	4		
	radio channel							
BGT	12. Surface security sound detector radio channel	Астра-6131		ТЭКО	pcs.	13		
BGB	13. The detector is a security point magnetic contact	Астра-3321		ТЭКО	pcs.	39		
	radio channel							
BGM	14. Electrical contact point security detector	Астра-3221		ТЭКО	pcs.	1		
	radio channel							
BIALS	15. Combined security alarm radio channel	Астра-2331		ТЭКО	pcs.	4		

Согласовано

Взам. подл. №

Подпись и дата

Инв. № подл.

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Sheet 9

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Symbol	Name and specifications	Type, brand, designation of the document, questionnaire	Product code	Manufacturer	Unit of measu-rement	Qty	Weight 1 unit, kg	Note
	Материалы и монтажные изделия							
	1. Storage battery, 12V/7Axh	DTM1207		Delta	pcs.	1		
	2. Storage battery, 12V/17Axh	DTM1217		Delta	pcs.	3		
	3. Key Touch Memory	DS-1990A		Dallas	pcs.	4		
	4. Circuit breaker, 3A	BA47-29-1P 3A B		IEK	pcs.	2		
	5. Cable channel, Elecor, 25x16mm			IEK	m	10		
	6. Cable channel, Elecor, 40x25mm			IEK	m	6		
	7. Fittings for cable channel, Elecor, 40x25mm			IEK	pcs.	3		
	8. Smooth PVC pipe, d = 20mm, gray, L = 2m			IEK	pcs.	1		
	9. Mounting metal sheet 450x450mm, thick. 1mm				pcs.	1		
	10. Fire-resistant assembly foam, cylinder gun	SOUDAFOAM FR		SOUDAL	pcs.	1		
	Cable production							
K2	1. LAN cable, outdoor, сеч. 4x2x0,52мм	ParLan U/UTP Cat5e PE		Паритет	m	35		
K6	2. Cable RS485, cross-section 2x2x0.60mm	КИС-Внг(А)-LS		Паритет	m	65		
K7	3. Cable for signaling systems, cross-section 1x2x0.97mm	КСВВнг(А)-LS		Паритет	m	80		
K8	4. Cable for signaling systems, cross-section 4x0.5mm	КСВВнг(А)-LS		Паритет	m	5		
M2	5. Power cable, cross-section 3x1.5mm2	ВВГнг(А)-LS		Спецкабель	m	5		

Согласовано

Взам. подл. №

Подпись и дата

Инв. № подл.

Chang	Party	Sheet	№ doc.	Signature	Date

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Sheet 10

A4 format

Designation spare parts	Code product	Spare part name	A place stacking	Applicability	Quantity in the product, pcs.	Quantity in a set, pcs.	Note
		Fire alarm system					
IS	26.30.50.129	1. Communication line insulator Астра-А ИЛС	–	–	1	–	–
BTH	26.30.50.121	2. Optical-electronic smoke detector radio channel Астра-4245	–	–	3	–	–
BTHL	26.30.50.121	3. Optical-electronic smoke detector linear ИПДЛ-52СМД, range 8-60m	–	–	1	–	–
BTK	26.30.50.121	4. Maximum differential radio channel fire detector Астра-4345	–	–	1	–	–
BTM	26.30.50.121	5. Manual radio channel fire detector Астра-Z-4545	–	–	1	–	–
BIAL	26.30.50.123	6. Radio channel fire warning light Астра-Z-2745	–	–	1	–	–
BIALS	26.30.50.123	7. Combined radio channel fire alarm Астра-Z-2345	–	–	2	–	–
		Automatic fire exstinguishing system					
MPF	26.30.50.129	1. Module of powder fire extinguishing МПП(р)-8Н-И-ГЭ-УХЛ2,5	–	–	4	–	–
BTH	26.30.50.121	2. Optical-electronic smoke fire detector ДИП-31	–	–	1	–	–
BTK	26.30.50.121	3. Combined gas and heat fire detector ИП435-8/101-04-А1R СОнет	–	–	1	–	–
BTM	26.30.50.122	4. Remote start device УДП513-3М	–	–	1	–	–
BGB	26.30.50.111	5. Magnetic contact point detector ИО102-20 А2П В	–	–	1	–	–
BIALS	26.30.50.123	6. Combined fire alarm "Powder go away" КОП-25П(С)	–	–	1	–	–

Согласовано

Взам. подл. №

Подпись и дата

Инв. № подл.

Chang	Party	Sheet	№ doc.	Signature	Date
Developed		Sinelnikov			03.21
CPE		Sinelnikov			03.21
Reg.control		Ivanov			03.21

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Spare parts kit list

Stage	Sheet	Sheets
W	1	2

A4 format

Designation spare parts	Code product	Spare part name	A place stacking	Applicability	Quantity in the product, pcs.	Quantity in a set, pcs.	Note
BIAL	26.30.50.123	7. Fire alarm light "Do not enter powder" КОП-25П, IP54	-	-	1	-	-
BIAL	26.30.50.123	8. Fire alarm light "Automation off" КОП-25П, IP54	-	-	1	-	-
		Security alarm system					
BGL	26.30.50.111	1. Surround security detector optoelectronic passive	-	-	2	-	-
		radio channel Астра-5131 исп. А					
BGS	26.30.50.111	2. Surface security detector optical-electronic passive	-	-	1	-	-
		radio channel Астра-5131 исп. Ш					
BGT	26.30.50.111	3. Surface security sound detector radio channel Астра-6131	-	-	2	-	-
BGB	26.30.50.111	4. Radio channel magnetic contact point security detector Астра-3321	-	-	4	-	-
BGM	26.30.50.111	5. Radio channel electrical point security alarm Астра-3221	-	-	1	-	-
BIALS	26.30.50.114	6. Combined security alarm radio channel Астра-2331	-	-	1	-	-

Согласовано

Взам. подл. №

Подпись и дата

Инв. № подл.

Изм.	Кол.уч.	Лист	№док.	Подпись	Дата

311/2021-FS1.SP

Sheet 2

A4 format

Construction assignment to the customer

1. Assignment for power supply

FAS, AFES and SAS technical means belong to category I in terms of power supply reliability.

Power supply shall be carried out from the input distribution device of the Object (hereinafter referred tc as the IDD) from a single-phase industrial AC network with a rated voltage of 220V and a frequency of 50Hz with voltage deviations from -15% to + 10% and a frequency of + 1% of the rated value.

To organize the power supply of the technical means of the FAS, AFES and SAS, install a power security shield (hereinafter referred to as the PSS) in the spare parts store.

For PSS of the building stations, use modular box ЩРН-П-12. Install a voltage relay РН-111М in the PSS, an input circuit breaker ВА47-29 1P/10A, six ВА47-29 1P/3A circuit breakers and a ВА47-29 1P/1A circuit breaker.

Connect the redundant power supplies РИП-24 исп. 06, РИП-24 исп. 56, РИП-12 исп. 54 and РИП-12 исп. 0' and two blocks С2000- АСПТ to the automatic switches ВА47-29 1P/3A. Connect the ДПА-2104 emergency lighting lamp to the ВА47-29 1P/1A circuit breaker.

The total installed capacity of electrical consumers is 740 VA, including:

- redundant power supply РИП-24 исп. 06 – 225 VA;
- redundant power supply РИП-24 исп. 56 – 225 VA;
- redundant power supply РИП-12 исп. 54 – 60 VA;
- redundant power supply РИП-12 исп. 01 – 100 VA;
- block С2000- АСПТ – 60 VA;
- block С2000- АСПТ – 60 VA;
- emergency lighting lamp ДПА-2104 – 5 VA;
- emergency lighting lamp ДПА-2104 – 5 VA.

For the PSS of the building machine room, use the ЩРн-9з-1 distribution case. Install a voltage relay РН-111М in the PSS, an input circuit breaker ВА47-29 1P/10A, three ВА47-29 1P/3A circuit breakers and a ВА47-29 1P/1A circuit breaker.

Connect the redundant power supplies РИП-24 исп. 12, РИП-24 исп. 50 and РИП-12 исп. 02 to the automatic switches ВА47-29 1P/3A. Connect the ДПА-2104 emergency lighting lamp to the ВА47-29 1P/1A circuit breaker.

The total installed capacity of electrical consumers is 285 VA, including:

- redundant power supply РИП-24 исп. 12 – 90 VA;
- redundant power supply РИП-24 исп. 50 – 120 VA;
- redundant power supply РИП-12 исп. 02 – 70 VA;
- emergency lighting lamp ДПА-2104 – 5 VA.

The power supply of the PSS should be provided from the IDD of the building stations and the building machine room with the installation of the ВА47-29 1P/10A circuit breaker.

The cable power supply lines should be made with ВВнг(А)-FRLS 3х1,5мм2 and ВВГнг(А)-LS 3х1,5мм2 cables. Lay cable lines in a cable channel and in a flexible corrugated pipe.

Protective grounding (grounding) must be performed in accordance with the requirements of ПУЭ-7 and СП 76.13330.2016.

2. Assignment on the organization of the notification transmission system

For the automatic transmission of voice messages and notifications in the SMS format when the Fault, Attention, Fire and Alarm signals are generated to the phone of the responsible person of the economic agency, without the participation of the facility personnel, the Астра-GSM (ПАК Астра) switching module installec in the Астра-8945 and Астра-812 Pro devices is used and a terminal device for the notification transmissior system UO-4C.

The customer needs to purchase two SIM-cards from different mobile operators for each device, one SIM-card is the main one, the second SIM-card is a reserve one and give them to the installation and commissioning organization.

Согласовано

Взам. подл. №

Подпись и дата

Инв. № подл.

Chang	Party	Sheet	№ doc.	Signature	Date
Developed		Sinelnikov			03.21
CPE		Sinelnikov			03.21
Reg.control					03.21

3112021-FS1.CA

Constructionassignmenttothe customer

Stage	Sheet	Sheets
W		1

A4format

Explanatory note of estimate documentation

1. General Provisions

This section of the estimate documentation for the creation of a fire alarm system and a security alarm system at the IMS PS36/IS44 central recording facility stations at the address: 684025, Kamchatskiy Krai, Elizovskiy Region, Nachiki developed on the basis of design documentation 311/2021-FS1.

Determination of the cost of work was carried out in the federal estimate and regulatory framework of 2020 (ФСНБ-2020) by the base-index calculation method (ФЕР-2020), on the basis of methodological normative documents in accordance with the order of the Ministry of Construction of Russia № 421/пр dated 04.08.2020. "On approval of the Methodology for determining the estimated cost of construction, reconstruction, overhaul, demolition of capital construction, works to preserve cultural heritage (historical and cultural monuments) of the peoples of the Russian Federation on the territory of the Russian Federation."

2. The procedure for determining the estimated cost of work

The cost of construction and installation works in the estimate documentation was determined using collection № 67 (ФЕРр-2017) and collections No. 8, No. 10, No. 11 (ФЕРм) at the current price level as of the IV quarter of 2020 with a conversion factor K = 18.13 on the basis of the letter of the Ministry of Construction of Russia No. 54145-ИФ/09 dated 30.12.2020. (Appendix 1, Far Eastern Federal District, Kamchatka Krai, Other objects).

The cost of commissioning works in the estimate documentation was determined using the collection № 2 (ФЕРп) for commissioning at the current price level as of the IV quarter of 2020 with a conversion factor K = 53.02 based on the letter of the Ministry of Construction of Russia № 54145-ИФ/09 dated 30.12.2020. (Appendix 1, Far Eastern Federal District, Kamchatka Krai, Commissioning works), in addition, a reduction coefficient K = 0.5 was applied to the labor costs and wages of commissioning personnel.

Overhead costs are determined as a percentage of the amount of funds for wages of construction workers and machine operators in accordance with the "Methodological guidelines for determining the amount of overhead costs in construction carried out in the Far North and localities equated to them" (МДС 81-34.2004).

The estimated profit is determined as a percentage of the amount of funds for the remuneration of construction workers and machine operators in accordance with the "Methodological Guidelines for Determining the Estimated Profit in Construction" (МДС 81-25.2001), an additional reduction coefficient K = 0.9 is applied in accordance with the letter of the Federal Agency for construction and housing and communal services № АП-5536/06 dated 18.11.2004.

3. The procedure for determining the estimated cost of material resources

The cost of equipment not taken into account by the price tag of federal estimated prices for materials, products and structures used in construction (ФССЦ) was analyzed by the retail network, taking into account delivery to the Kamchatka Krai, Elizovskiy Region, Nachiki: determined by reverse counting from current prices as of the IV quarter of 2020 with a conversion factor K = 4.51 based on the letter of the Ministry of Construction of Russia № 45484-ИФ/09 dated 12.11.2020. (Appendix 4, p. 30, By non-production facilities).

The cost of materials not included in the price tag of federal estimated prices for materials, products and structures used in construction (ФССЦ) was analyzed by the retail network, taking into account delivery to the Kamchatka Krai, Elizovskiy Region, Nachiki: determined by reverse counting from current prices as of the IV quarter of 2020 with a conversion factor K = 18.13 based on the letter of the Ministry of Construction of Russia № 54145-ИФ/09 dated 12/30/2020. (Appendix 1, Far Eastern Federal District, Kamchatka Territory, Other objects).

The consolidated estimate of the construction cost was carried out using the program for drawing up the estimate documentation "ГРАНД-СМЕТА 2020".

Согласовано

Взам. подл. №

Подпись и дата

Инв. № подл.

Chang	Party	Sheet	№ doc.	Signature	Date
Developed		Sinelnikov			03.21
CPE		Sinelnikov			03.21
Reg.control		Ivanov			03.21

3112021-ED1.EN

Explanatorynoteofestimate documentation

Stage	Sheet	Sheets
W		1

A4format

Customer: Comprehensive Nuclear-Tests-Ban Treaty Organization

(name of company)

"Approved" "_____" _____ 2021

Consolidated estimated calculation in the amount 34 360,00 USD

(link to approval document)

CONSOLIDATED ESTIMATE OF THE COST OF CONSTRUCTION

for the creation of a fire alarm system, an automatic fire extinguishing system and a security alarm system in the central registration base of IMS PS36/IS44 stations at the address: Kamchatskiy Krai, Elizovskiy Region, Nachiki

(name of the construction site (object being repaired)

Compiled in prices as of the IV quarter of 2020

№	Estimated numbers and estimates	Name of chapters, objects, works and costs	Estimated cost				Total estimated cost, thousand rubles
			construction (repair and construction) works	installation works	equipment, furniture and inventory	other costs	
1	2	3	4	5	6	7	8
		Chapter 2. Main construction objects					
1	Estimated calculation (local estimate calculation)	Creation of a fire alarm system, an automatic fire extinguishing installation and a security alarm system	79,213	740,334	916,434	789,593	2 525,574
		Total for chapter 2 (thousand rubles)	79,213	740,334	916,434	789,593	2 525,574
2		TOTAL (thousand rubles)	79,213	740,334	916,434	789,593	2 525,574
3		TOTAL US dollars (at the rate of the Central Bank of the Russian Federation as of 15.03.2021, 1 USD=73,5081 RUB)	1 078,00	10 073,00	12 467,00	10 742,00	34 360,00

Head of the design organization S.V. Shevchenko

(signature, initials, surname)

Chief Project Engineer S.V. Sinelnikov

(signature, initials, surname)

Customer

(position, signature, initials, surname)

Attachment 3 – Special Instructions for Contracts - IMS stations operated by the SMS of MoD RF

1. The Contractor shall apply to the SMS authorities for obtaining/confirming site access permit for their specific personnel to enter the facility to perform the work at least 2 weeks before the scheduled visit. Passport copies of personnel designated to perform the work shall be attached to the request for the site access permit. The passport shall meet the following requirements:

    - Passport page with the photo and information about the issuing authority;
    - Page with address information.

2. In addition to the set of documents required for site access permit to perform the work, a Contractor shall also submit:

    - An approved design of the work to be performed;
    - A certified copy of self-regulatory company certificate confirming the Contractor's specialization (in case of work associated with design of facilities and systems, construction/repair, survey and other activities affecting safety);
    - A certified copy of the professional license (as required, in accordance with Federal Laws of the Russian Federation).

3. Upon review of the submitted documents, the SMS will approve/reject access of the Contractor's personnel to the facility to perform the work.

4. In the course of work execution, the Contractor shall follow the rules and requirements of the "stay" on site and shall maintain all required safety standards. In the event of violation of the rules of "stay" at the facility, violation of labor safety or other misconduct, depending on the extent of violation or misconduct, SMS reserves the right to cancel the access for either an individual Contractor Personnel or the Contractor as a whole. In the event such incidents occur, the SMS will promptly notify the Commission and provide clarifications accordingly.

5. **Temporary Interruption of the Work:** In the event that special internal activities are conducted by the SMS, the SMS reserves the right to suspend access to the Contractor's personnel to SMS's facilities (if these activities are of reciprocal influence) but not for a period longer than 5 work-days in each case. The SMS will notify the Commission and the Contractor about such activities.

6. **Tax** - In accordance with the provisions of the Facility Agreement (CTBT/LEG.AGR/33); Federal Law No. 95 FZ "About grants (technical assistance)…" dated 4 May 1999; and Order of the Ministry of Foreign Affairs of the Russian Federation and Ministry of Finance of the Russian Federation; March 24, 2014 No. 3913/19n, Work under this Contract shall be exempt from tax and relevant duties levied in the Russian Federation.

7. **Tax Exemption Certificate:** In the event a Tax Exemption Certificate is required by the Contractor, the Contractor shall communicate in writing with the Commission and SMS to agree on the required procedures to be undertaken.