Technical Note
on the Basic Design Study
on the Project for Improvement of Mushviq Substation
in the Republic of Azerbaijan

The Minutes of Discussion for the captioned study was signed between Mr. Hiroyuki Hayashi, leader of Basic Design Team and Mr. Marlen A. Askerov, Chief Engineer of AZERENERJI Joint Stock Company on September 5th 2005.

The Team had carried out further detailed survey at the sites and held discussions with the concerned engineers of AZERENERJI. In the course of discussions, both sides have confirmed the technical items described in the attached sheets for supplementary document of the Minutes of Discussions.

Baku, September 19, 2005

Michio Hasegawa
Chief Consultant
Basic Design Study Team
Japan International Cooperation Agency

Marlen A. Askerov
Chief Engineer
AZERENERJI Joint-Stock Company
The Republic of Azerbaijan

ATTACHMENT

1. Fire Fighting Systems

   Result of the further investigation of the existing equipment of Mushviq Substation, it was found that the existing automatic water fire fighting system for the 200MVA transformers were out of orders, which is also installed in 1986.

   The fire fighting system is mandatory according to the electrical regulation stipulating that "all transformers of 500kV or, transformer of 220, 330kV that capacity is more than 200MVA shall be furnished automatic fire fighting system".

   The AZERENERJI requested to add the replacing the two sets of exisiting water fire fighting systems to nitrogen fire fighting systems in the components of the project, and when accepted, AZERENERJI agreed to demolish all existing fire fighting system by their own cost.

   The Consultant understood the necessity of replacing the systems and agreed to carry out further study and discussion with JICA.

2. Load Shedding during Replacing Transformers

   According to the implementation schedule of the Project, which is planed by the Consultant, the replacing period of the transformers will be December of 2007 to February of 2008 i.e. peak load season of Mushviq Substation.

   AZERENERJI agreed to have all responsibility to carry out the load shedding to their customers so that existing one 200MVA transformer can provide the power, when another existing 200MVA transformer to be demolished and new 250MVA transformer to be installed on the existing foundation, assembled, tested, and commissioned, and it's vice versa (See Annex-1, Annex-2 and Annex-3).

3. Spare pats for the transformers

   AZERENERJI requested the spare parts for the transformer as shown in Annex-4.

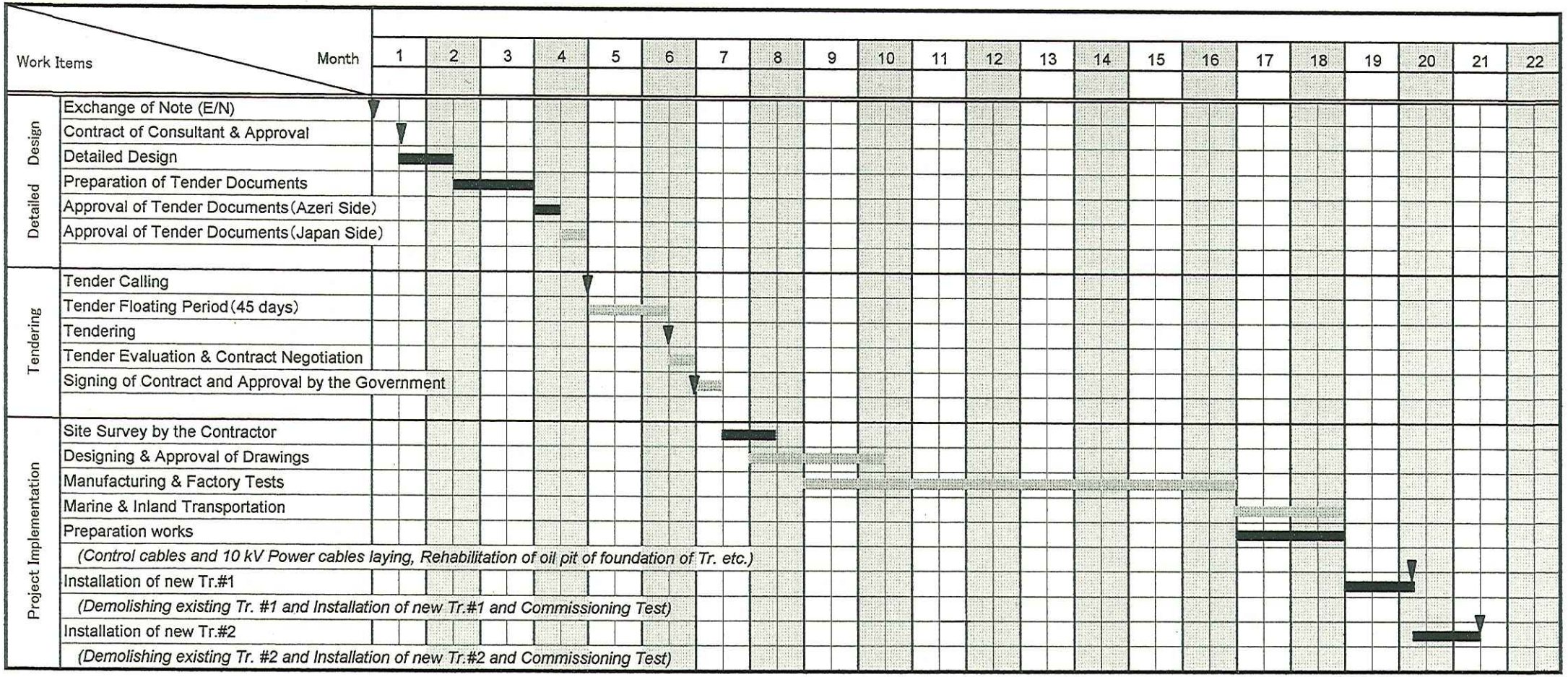
4. AZERNERJI Expenditures in 2006

   The Consultant explained that the expenditure of AZERENERJI for the Project in 2006 would be 1,500 US$ at most for Banking Arrangement and Authorization to Pay for advance payment to the Consultant.

   The expenditures in 2007 and 2008 will be mentioned in the Basic Design Report, which will be explained in January of 2006, and submitted finally in March of 2006.

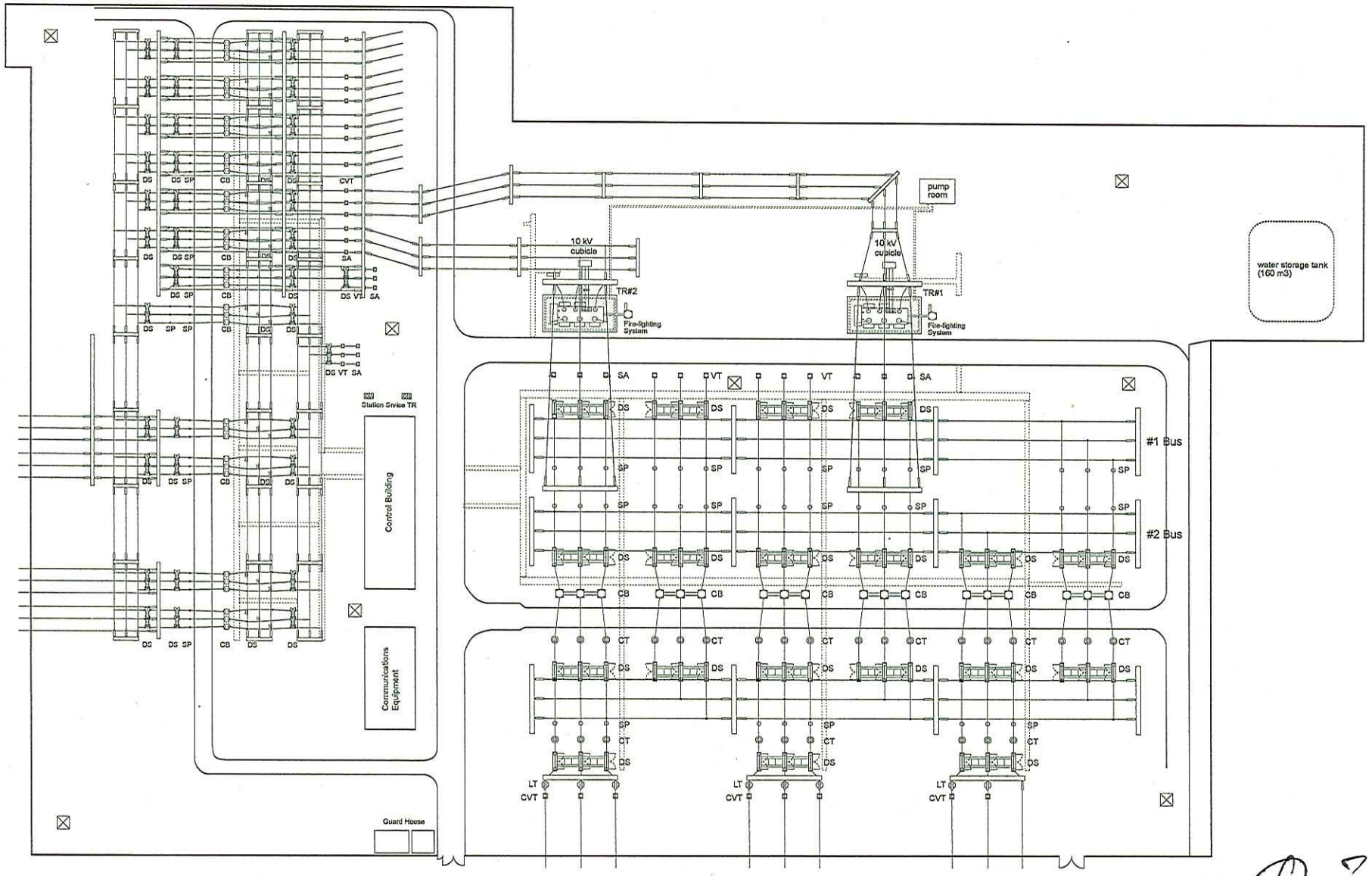
Annex-1 *Planed Project Schedule*
Annex-2 *General Layout of Mushviq Substation*
Annex-3 *Single Line Diagram of Mushviq Substation*
Annex-4 *Spare Parts for the 250MVA Transformer*

Planned Project Schedule



	2006							2007												2008		
	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
Actual Peak Load at 2004 - 2005 (MVA)												129.6	91.5	114.3	121.9	76.2	91.5	198.1	251.5	228.6	236.3	236.3
Peak Load with 5% x 3 years = 15% increasing (MVA)												149.0	105.2	131.5	140.2	87.6	105.2	227.9	289.2	262.9	271.7	271.7
Actual Peak Load at 2004 - 2005 (A)												340	240	300	320	200	240	520	660	600	620	620

Annex-1

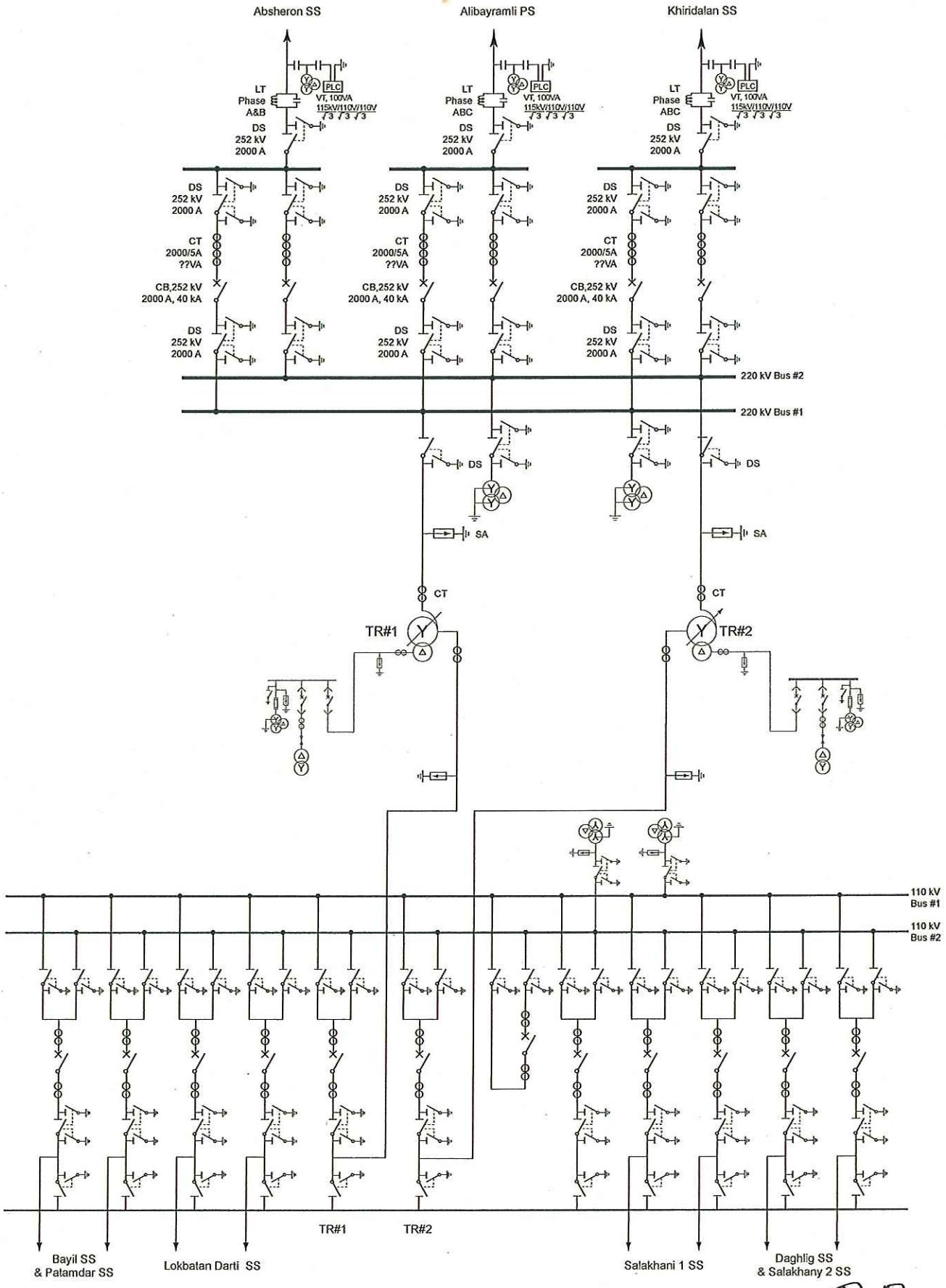


Not to scale

The Basic Design Study on the Project for Improvement of Mushviq Substation in the Republic of Azerbaijan	AZERENERJI Joint Stock Company	Drawing No.	
	Japan Internatonal Cooperation Agency	Title	Mushviq Substation: Layout Plan
	Nippon Koei Co., Ltd.		

Annex-2

Annex-3



The Basic Design Study on the Project for Improvement of Mushviq Substation in the Republic of Azerbaijan	AZERENERJI Joint Stock Company	Drawing No.
	Japan Internatonal Cooperation Agency	Title: Single Line Diagram: Mushviq Substation after the Project
	Nippon Koei Co., Ltd.	

Spare Parts for the 250MVA Transformer

For one unit of Transformer

1) One (1) bushing for each type
2) One (1) set of changeable parts for OLTC
3) One (1) complete set of gaskets
4) One (1) dial type thermometer
5) Two (2) auxiliary relays and contactors of each type
6) One (1) protection relay of each type
7) One (1) circuit breaker of each type
8) One (1) push-buttons and control switches of each type
9) One hundred percent (100%) of installed fuses and lamps
10) Two (2) lamp holders of each type
11) One (1) silicagel breather
12) One (1) conservator diaphragm.
13) Tow (2) completer sets of cooling fans

For one set of Control Panel

1) Twenty percent (20%) of installed lamps holders
2) One hundred percent (100%) of installed fuses and lamps
3) One (1) selector and control switches, push-buttons of each type
4) Two (2) auxiliary relays of each type
5) One (1) automatic miniature circuit breaker of each type
6) Two (2) time relays of each type
7) One electronic board of each type
8) One (1) indicating instrument of each type
9) One (1) meter of each type
10) One (1) transducer of each type

For one set of Protection Panel

1) One (1) protection relay of each type
2) Two (2) auxiliary and time relay s of each type
3) One hundred percent (100%) of installed fuses and lumps

Installation Position of the Main Transformers

The Study Team discussed with AZERENERJI's staff on the installation position of the main transformers and method of construction. As a result, we reached mutual agreement once to adopt the idea that new transformers were installed at the neighboring positions of the existing ones and switched over the connections in series as shown in the attached figure to minimize the power outage period considering the importance of Mushviq Substation.

In this idea, however, new construction of transformer's foundation, removal of the existing voltage transformer, which is connected to 220 kV bus, new installation of 220 kV disconnecting switches and surge arresters, are installation of new gantries to support 220kV conductors are additionally needed comparing with the idea that the new transformers are to be installed at the same positions where the existing ones are currently installed. The Chief Engineer of AZERENERJI, therefore, refused the first idea and suggested to adopt the second idea as shown in Drawing AZ_BM_04. We finally reached mutual agreement that AZERENERJI will execute power outage during the replacement work and the scheduled partial load shedding on the customer side taking all responsibilities, if necessary (refer to item 2.1 in Technical Note).

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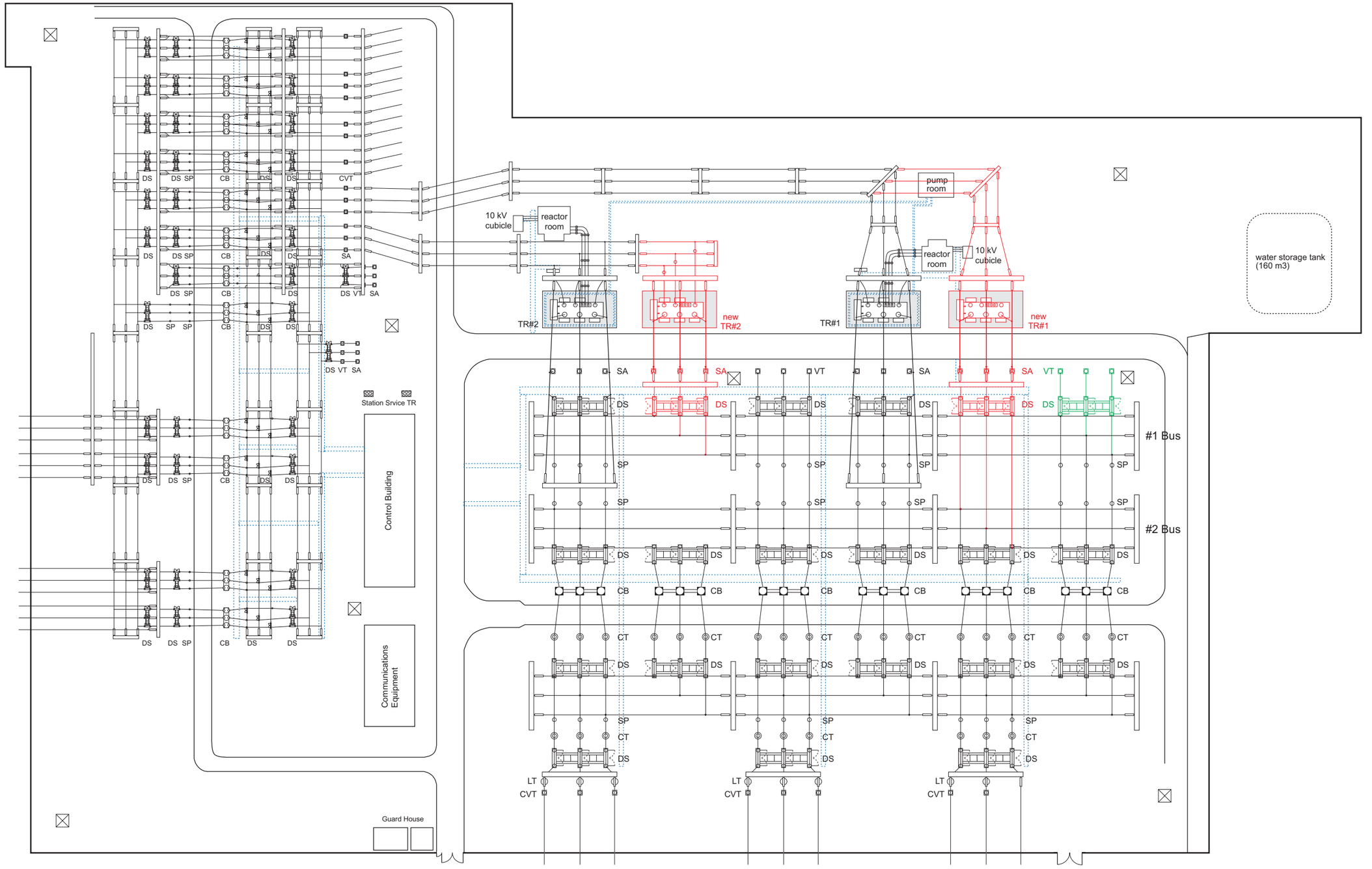

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The Basic Design Study on the Project for Improvement of Mushviq Substation in the Republic of Azerbaijan	**AZERENERJI Joint Stock Company**	**Drawing No.**	
	Japan Internatonal Cooperation Agency	**Title**	Alternative Idea
	Nippon Koei Co., Ltd.		

Minutes of Discussions
on the Basic Design Study
on the Project for Improvement of Mushviq Substation
in the Republic of Azerbaijan
(Explanation on the Draft Report)

In August, 2005, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched a Basic Design Study Team on the Project for Improvement of Mushviq Substation (hereinafter referred to as "the Project") to the Republic of Azerbaijan (hereinafter referred to as "Azerbaijan") and through discussion, field survey, and technical examination of the results in Japan, JICA prepared a draft report of the study.

In order to explain and consult the Government of Azerbaijan on the components of the draft report, JICA sent to Azerbaijan the Draft Report Explanation Team (hereinafter referred to as "the Team"), which is headed by Mr. Hiroyuki Hayashi, Transportation and Electric Power Team of the Project Management Group I, Grant Aid Management Department, JICA, and is scheduled to stay in the country from January 30 to February 7, 2006.

As a result of discussions, both sides have confirmed the main items described in the attached sheets.

Baku, February 2, 2006

Hayashi Hiroyuki
Leader
Draft Report Explanation Team
Japan International Cooperation Agency

Saleh Mamedov
Chief Engineer
AZERENERJI Joint-Stock Company
The Republic of Azerbaijan

ATTACHMENT

1. Components of the Draft Report

The Azerbaijani side agreed and accepted in principle the components of the Draft Report explained by the Team.

2. Schedule of the Study

JICA will complete the Final Report in accordance with the confirmed items and send it to the Azerbaijani side around the end of March 2006.

3. Other Relevant Issues

(1) The Azerbaijani side should assist the Contractor to obtain all permissions necessary for inland transportation to the Mushviq Substation from relevant Ministries and Authorities.

(2) The Azerbaijani side should coordinate with Barmek of detailed schedule for power supply limitation during the installation on new main transformers, so that Barmek can schedule to shift the partial load to the other substations for avoiding or minimizing the load shedding and the customers especially for refugees and internally displaced persons (IDPs).

In addition to the above, the Azerbaijani side strongly requested to the Team that overall schedule after the Exchange of Note for the project should be reconsidered so that at installation work would not overlap with load peak period.

(3) The Azerbaijani side should allocate necessary budget for undertakings to be done on a timely manner, based on the provisional amount shown in the draft report in fiscal year 2006 and 2007.

(4) In addition to the Minutes of Discussions and Technical Note signed on September 2 and September 19, 2005 respectively, Azerbaijani side agreed that the works to be undertaken by them at his own cost as listed in Item 1 of Annex-1.

(5) In the discussion on the technical specification prepared by the Team, both sides confirmed as mentioned in Item 2 of Annex-1.

Item 1: The works to be undertaken by the Azerbaijani side at his own cost.

1) To prepare necessary space for temporary placement for removed equipment i.e..main transformers, 10kV cubicles, etc. near by main gate inside the Mushviq substation.

2) To prepare necessary space for temporary container office for the Contractor inside the Mushviq substation.

3) To remove and/or transfer of existing equipment, which is not to be obstacle against the installation works, such as the existing 10kV cubicles, 10kV reactors and their buildings, 10kV underground cables, main pipe of firefighting system, etc. after completion of the Project.

Item 2: Confirmation on the technical specification prepared by the Team

1) Name plates and rating plates, duty plates, instruction plates or labels and warning notices of the equipment shall be written both English and Azerbaijani.

2) Original operation and maintenance manual of the equipment shall be written in English, duplicate of them shall be written in Azerbaijani only for reference.

3) Applicable Standards shall be both GOST-R and IEC. In case there are differences between both standards, the Azerbaijani side shall prepare comparison table and decide with the Consultant which shall be prevail, and put these data or information in the tender document during the tender document preparation period.

4) Distance relays for back up protection are requested to be added in the protection system of the transformers.