



National Electric Power Regulatory Authority
Islamic Republic of Pakistan

2nd Floor, OPF building, G-5/2, Islamabad
Ph: 9206500,9207200, Fax : 9210215
E-mail: registrar@nepra.org.pk

Registrar

No. NEPRA/R/LAG-175/ 2211-13

March 31, 2011

Mr. Abdul Hamid Akbar
Director General
Pakistan Atomic Energy Commission
Chashma Nuclear Power Project Unit-2
Chashma Barrage Colony, Kundian,
District Mianwali

Subject: Generation Licence No. GL/09/2011
Licence Application No. LAG-175
Pakistan Atomic Energy Commission (PAEC)

Reference: Your letter No. C2GDG-221.10-2010, dated September 08, 2010.

Enclosed please find herewith Generation Licence No. GL/09/2011 granted by National Electric Power Regulatory Authority (NEPRA) to Pakistan Atomic Energy Commission for its 340.00 MW_e, Chashma Nuclear Power Plant Unit-2 (CHASHNUPP-II/C-2) located at Chashma, Tehsil Piplan, District Mianwali, Punjab pursuant to Section 15 of the Regulation of Generation, Transmission and Distribution of Electric Power Act (XL of 1997). Further, the determination of the Authority in the subject matter is also attached.

2. Please quote above mentioned Generation Licence No. for future correspondence.

Enclosure: **Generation Licence**
[No. GL/09/2011]


(Syed Safer Hussain)

Copy to:

1. Chief Executive Officer, Faisalabad Electric Supply Company (FESCO), Abdullahpur, Canal Bank Road, Faisalabad
2. Director General, Pakistan Environmental Protection Agency, House No. 311, Main Margalla Road, F-11/3, Islamabad.

**National Electric Power Regulatory Authority
(NEPRA)
Islamabad – Pakistan**

GENERATION LICENCE

No. GL/09/2011

In exercise of the Powers conferred upon the National Electric Power Regulatory Authority (NEPRA) under Section 15 of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 (XL of 1997), the Authority hereby grants a Generation Licence to:

Pakistan Atomic Energy Commission
(PAEC)

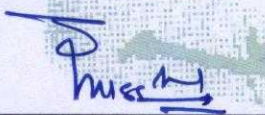
for its Chashma Nuclear Power Plant Unit-2 (CHASHNUPP-II/C-2),
located at Chashma, Tehsil Piplan, District Mianwali, in the
Province of Punjab

(Installed Capacity: 340.00 MW_e Gross)

to engage in generation business subject to and in accordance with the Articles of this Licence.

Given under my hand this _____ day of **March**, Two Thousand & Eleven, and expires on **29th** day of **June**, Two Thousand & **Forty**

Six.



Registrar

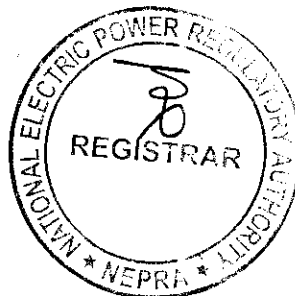


Article-1
Definitions

1.1 In this Licence

- (a) "Act" means the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 (XL of 1997);
- (b) "Authority" means the National Electric Power Regulatory Authority constituted under section 3 of the Act;
- (c) "Grid Code" means the NTDC Grid Code;
- (d) "Licensee" means Pakistan Atomic Energy Commission (PAEC) for its Chashma Nuclear Power Plant Unit-2 (C-2);
- (e) "NTDC" means National Transmission and Despatch Company;
- (f) "Power Purchaser" means CPPA of NTDC purchasing power on behalf of XW-DISCOs;
- (g) "Rules" mean the National Electric Power Regulatory Authority Licensing (Generation) Rules, 2000;
- (h) "XW DISCO" means an Ex-WAPDA distribution company engaged in the distribution of electric power.

1.2 Words and expressions used but not defined herein bear the meaning given thereto in the Act or in the Rules.



Article-2
Application of Rules

This Licence is issued subject to the provisions of the Rules, as amended from time to time.

Article-3
Generation Facilities

3.1 The location, size (capacity in MW), technology, interconnection arrangements, technical limits, technical functional specifications and other details specific to the power generation facilities of the Licensee are set out in Schedule-I to this Licence.

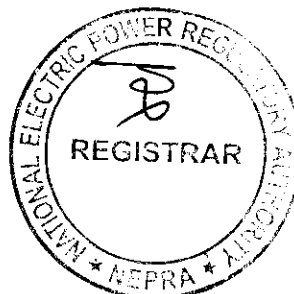
3.2 The net capacity of the generation facilities of the Licensee is set out in Schedule-II hereto.

3.3 The Licensee shall provide the final arrangement, technical and financial specifications and other details specific to generation facilities before commissioning.

Article-4
Term of Licence

4.1 This Licence is granted for a term of thirty five (35) years after the Commercial Operation Date of the generation facilities.

4.2 Unless suspended or revoked earlier, the Licensee may within ninety (90) days prior to the expiry of the term of the Licence, apply for renewal of the Licence under the NEPRA Licensing (Application and Modification Procedures) Regulation, 1999 as amended or replaced from time to time.



Article-5
Licence fee

After the grant of the Generation Licence, the Licensee shall pay to the Authority the Licence fee in the amount and manner and at the time set out in National Electric Power Regulatory Authority (Fees) Rules, 2002.

Article-6
Tariff

The Licensee shall charge only such tariff which has been approved, determined, adjusted or specified by the Authority.

Article-7
Competitive Trading Arrangement

7.1 The Licensee shall participate in such measure as may be directed by the Authority from time to time for development of a Competitive Trading Arrangement. The Licensee shall in good faith work towards implementation and operation of the aforesaid Competitive Trading Arrangement in the manner and time period specified by the Authority. Provided that any such participation shall be subject to any contract entered into between the Licensee and another party with the approval of the Authority.

7.2 Any variation or modification in the above-mentioned contracts for allowing the parties thereto to participate wholly or partially in the Competitive Trading Arrangement shall be subject to mutual agreement of the parties thereto and such terms and conditions as may be approved by the Authority.

Article-8
Maintenance of Records

For the purpose of sub-rule (1) of Rule 19 of the Rules, copies of records and data shall be retained in standard and electronic form and all such records and data shall, subject to just claims of confidentiality, be accessible by authorized officers of the Authority.



Article-9
Compliance with Performance Standards

The Licensee shall comply with the relevant provisions of NEPRA Performance Standards (Generation) Rules 2009, as amended from time to time.

Article-10
Compliance with Environmental Standards

The Licensee shall comply with the environmental standards as may be prescribed by the relevant competent authority from time to time.

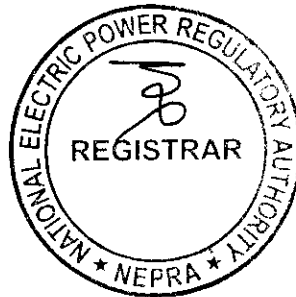
Article-11
Compliance with Nuclear Safety Standards

The Licensee shall comply with all nuclear safety standards and regulations as may be prescribed by the relevant competent authority from time to time.

Article-12
Provision of Information

12.1 The obligation of the Licensee to provide information to the Authority shall be in accordance with Section 44 of the Act.

12.2 The Licensee shall be subject to such penalties as may be specified in the relevant rules made by the Authority for failure to furnish such information as may be required from time to time by the Authority and which is or ought to be or have been in the control or possession of the Licensee.



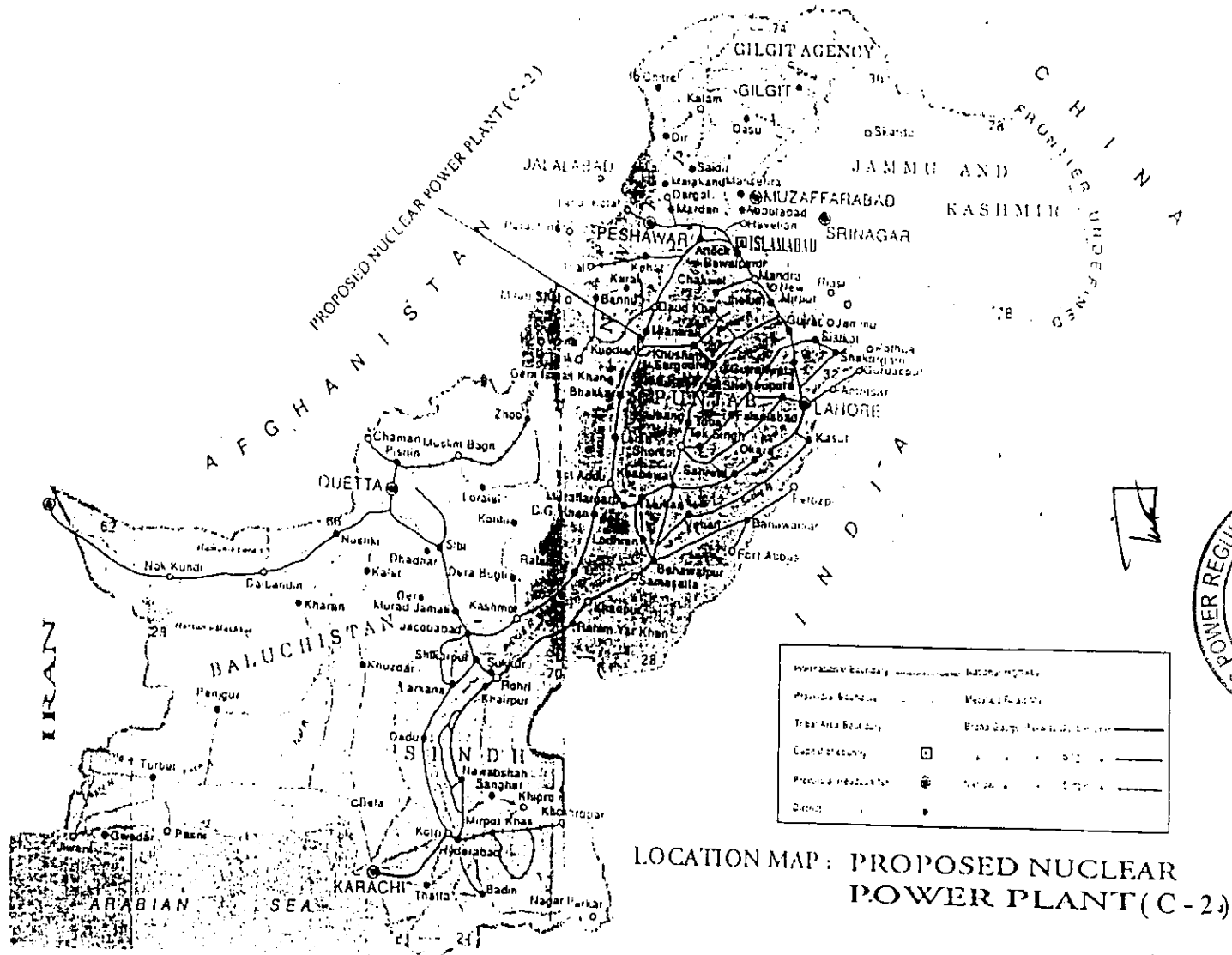
SCHEDULE-I

The location, size (capacity in MW) technology, interconnection arrangements, technical limits, technical functional specifications and other details specific to the Generation Facilities of the Licensee.

[A large diagonal line is drawn across the page, indicating that the content of this schedule is not applicable or has been redacted.]



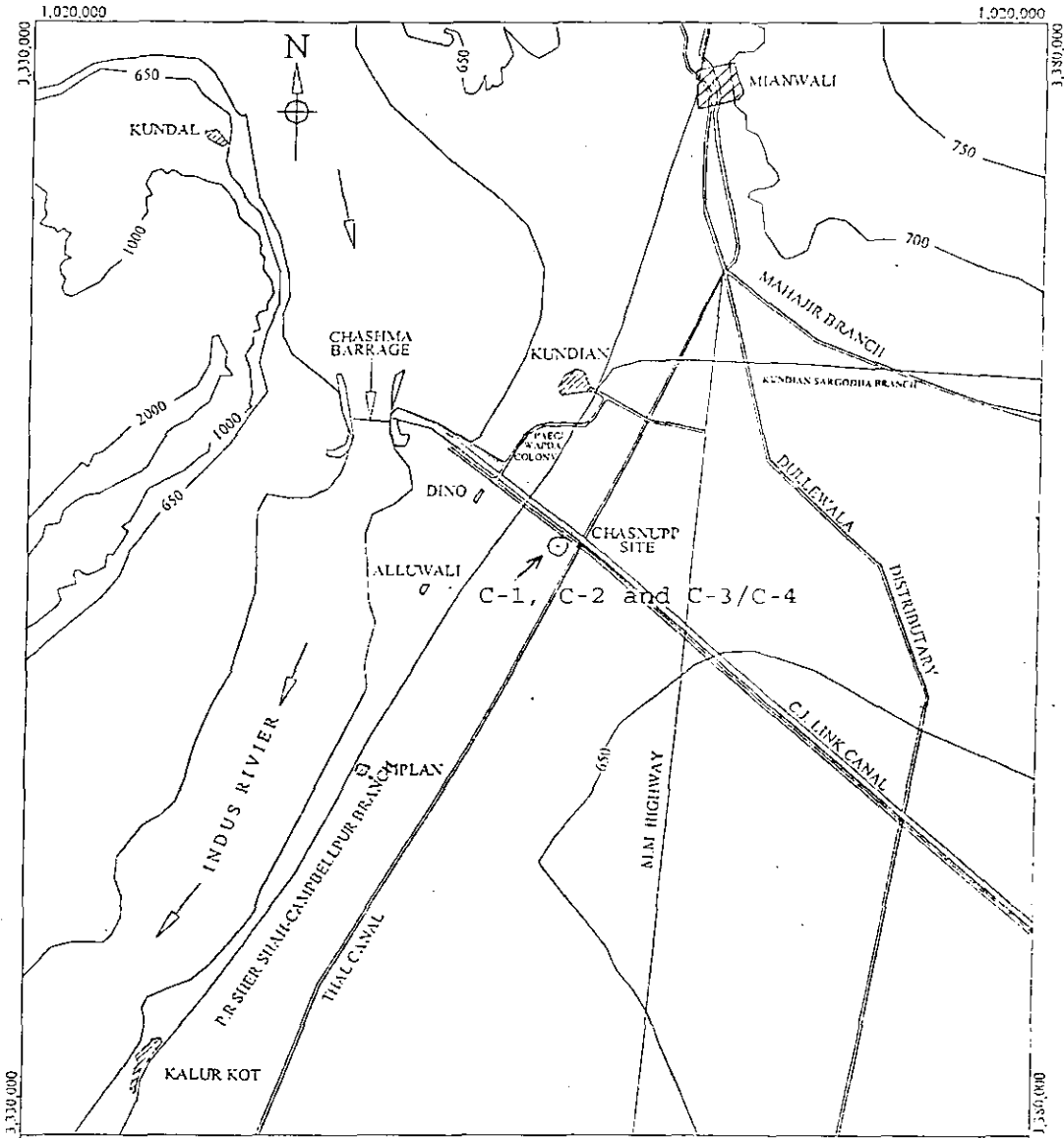
Generation Licence
 Pakistan Atomic Energy Commission
 Chashma Nuclear Power Plant Unit-2 (C-2)
 Chashma, Tehsil Piplan
 District Mianwali
 Punjab



LOCATION MAP : PROPOSED NUCLEAR
 POWER PLANT (C-2)








Proposed Site of CHASNUPP Unit-2



SCALE : 1:250,000

LEGEND:

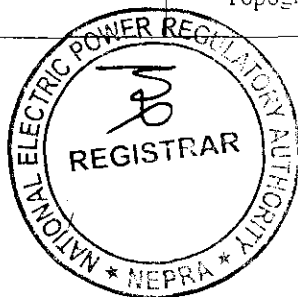
- RAILWAY LINE 
- HIGHWAY 
- RIVER BANK 
- CONTOUR 
- ROADS 

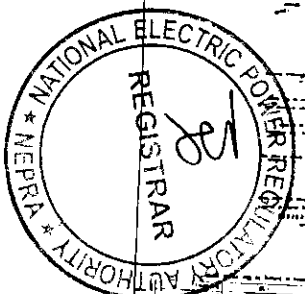
Note:-
 Contour levels are in feet above Mean Sea Level.

Source: Survey of Pakistan
 G.T.Sheets

**CHASHMA NUCLEAR POWER PLANT UNIT-2
 FINAL SAFETY ANALYSIS REPORT**

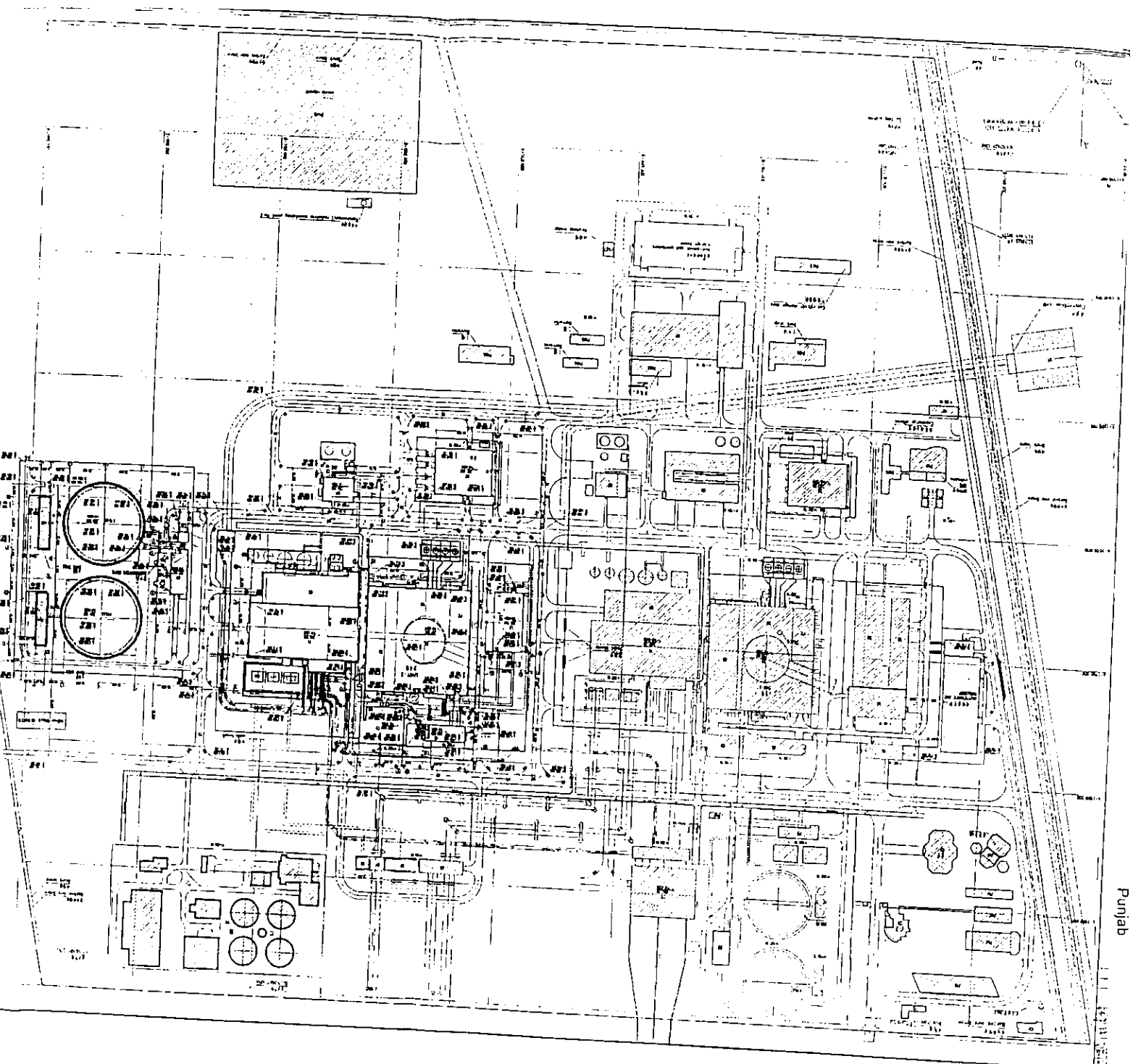
Topographical Map, Communication Links
 and Waterways

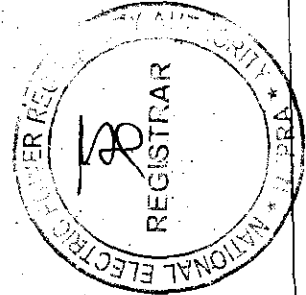
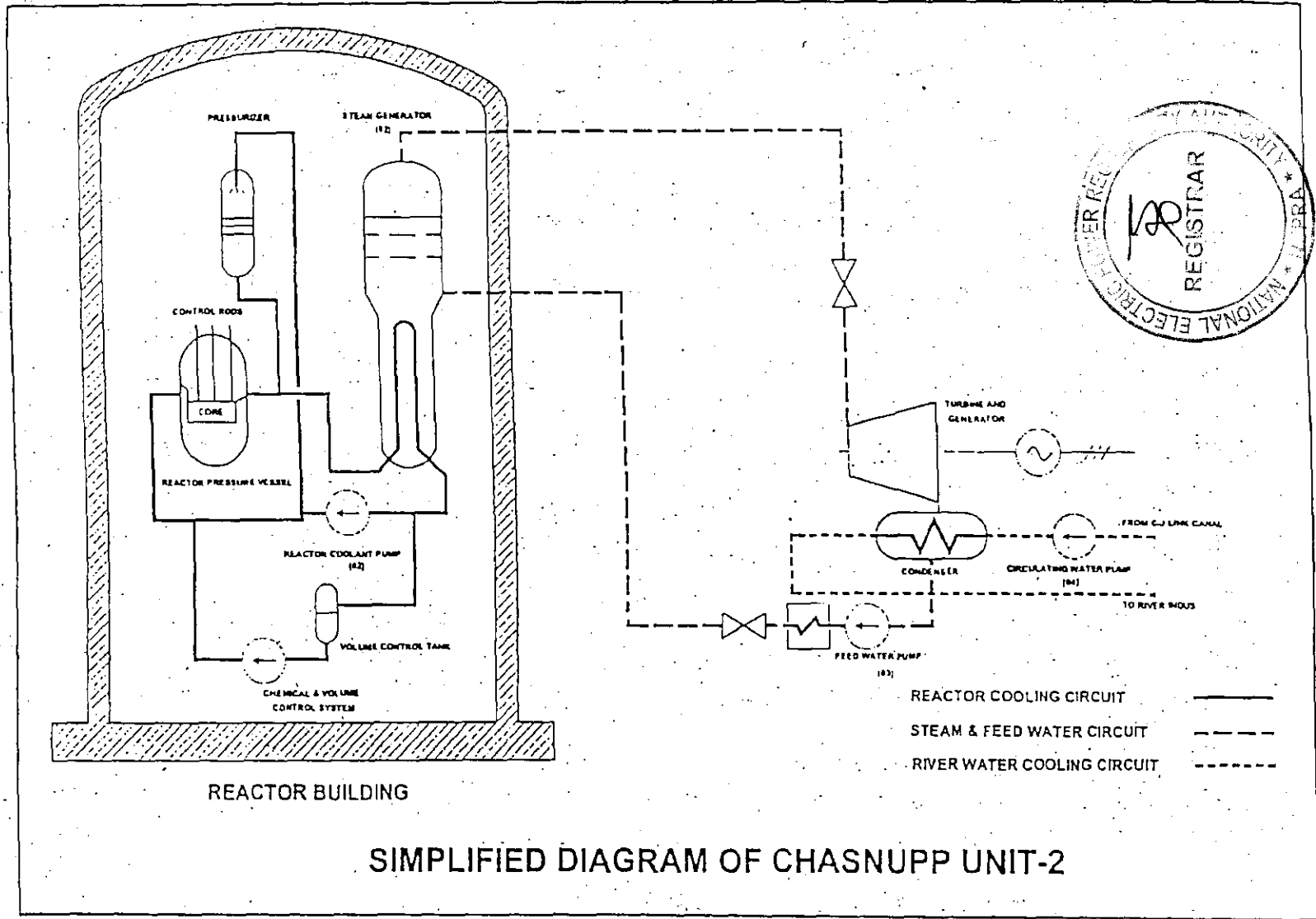




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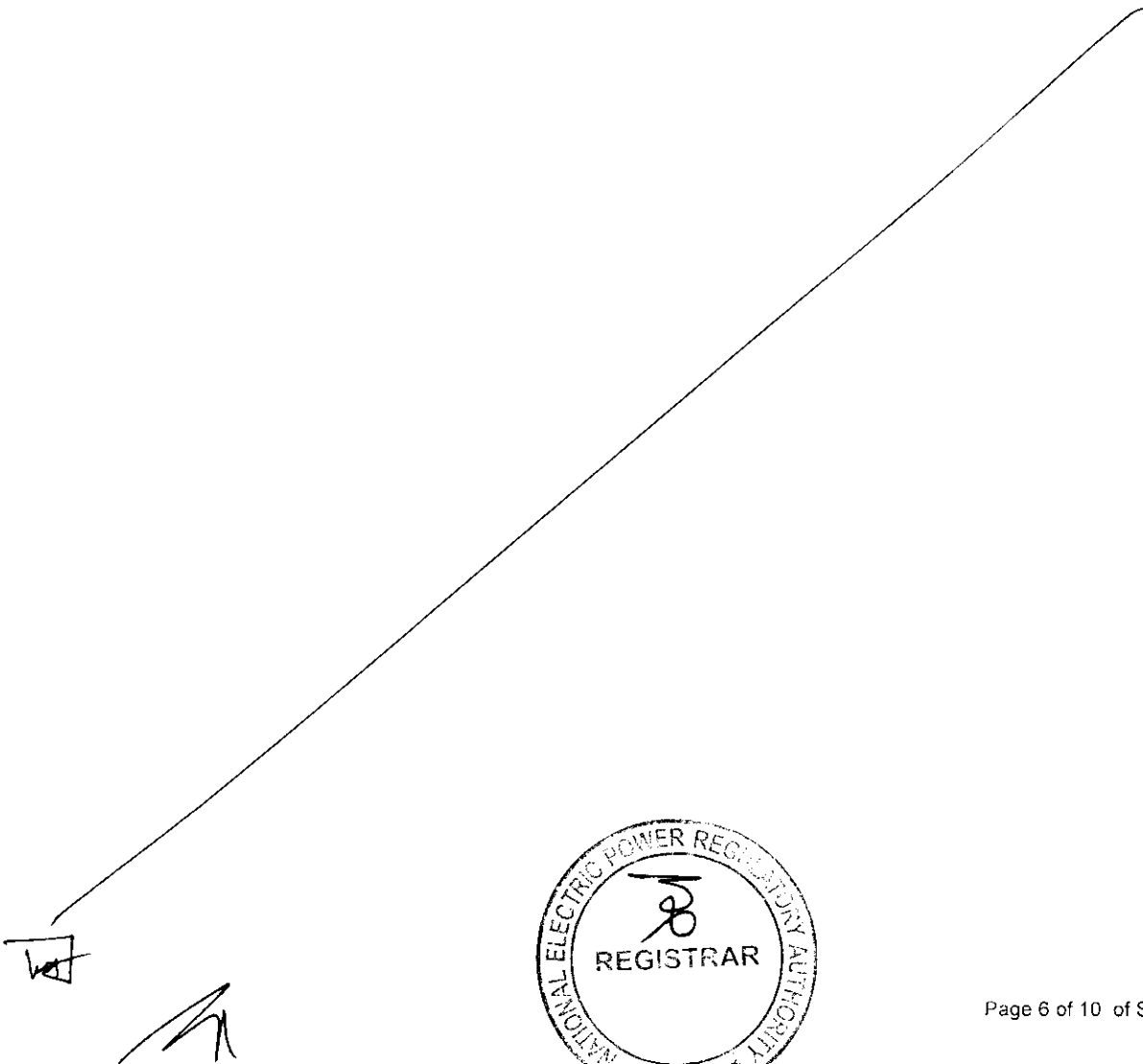
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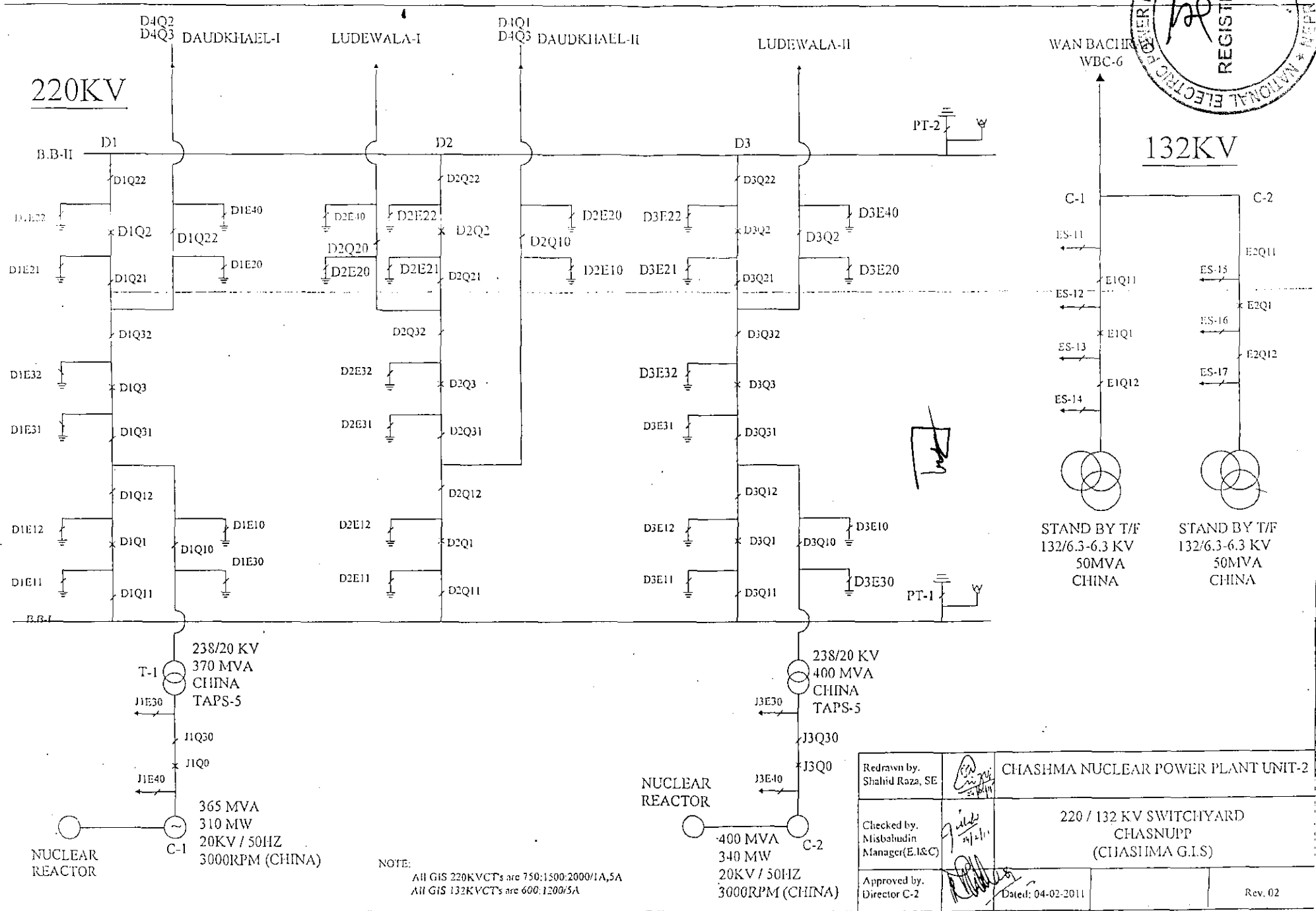
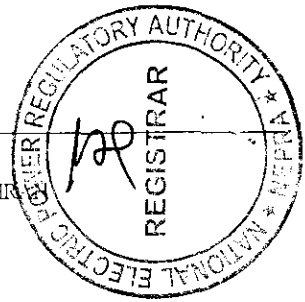




TRANSMISSION/INTERCONNECTION ARRANGEMENT
FOR DISPERSAL OF POWER FROM CHASHMA
NUCLEAR POWER PLANT UNIT-2
(C-2)

The power generated from C-2 shall be dispersed to the National Grid system of NTDC on 220 KV. The interconnection arrangement will consist of 220 KV Double Circuit (D/C) Twin Bundled (T/B) Transmission Line (measuring about 100 KM, constructed on ACSR Rail Conductor), connecting C-2 with 220 KV Ludewalla Grid Station.





220KV

132KV

238/20 KV
 370 MVA
 CHINA
 TAPS-5
 T-1

365 MVA
 310 MW
 20KV / 50HZ
 3000RPM (CHINA)
 C-1

NUCLEAR REACTOR

238/20 KV
 400 MVA
 CHINA
 TAPS-5

400 MVA
 340 MW
 20KV / 50HZ
 3000RPM (CHINA)
 C-2

NUCLEAR REACTOR

NOTE:
 All GIS 220KVCT's are 750:1500:2000/1A,5A
 All GIS 132KVCT's are 600:1200/5A

Redrawn by: Shahid Raza, SE		CHASHMA NUCLEAR POWER PLANT UNIT-2	
Checked by: Misbahudin Manager(E,I&C)		220 / 132 KV SWITCHYARD CHASNUPP (CHASHMA G.I.S)	
Approved by: Director C-2		Dated: 04-02-2011	Rev. 02

Plant Details*

(A). General Information

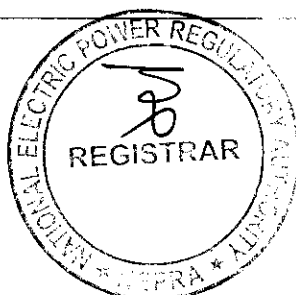
(i).	Name of Applicant	Pakistan Atomic Energy Commission (PAEC) for Chashma Nuclear Power Plant Unit-2 (C-2).
(ii).	Registered/Business Office	P.O. Box 3094, Islamabad.
(iii).	Plant Location	Chashma, Tehsil Piplan, District Mianwali, Punjab
(iv).	Type of Generation Facility	Nuclear Power Plant

(B). Plant Configuration

(i).	Rated Gross Capacity of Plant (MW)	340MW _e
(ii).	Type of Technology	Pressurized light water Nuclear power plant
(iii).	Moderator	Light water
(iv).	No. of Loops	2
(v).	Number of Units/Size (MW)	1 x 340 MW _e (Steam Turbine)
(vi).	Unit Make & Model	People's Republic of China (P.R. China)
(vii).	Expected Commissioning and Commercial Operation date (CoD)	June 30, 2011

* As provided by the PAEC





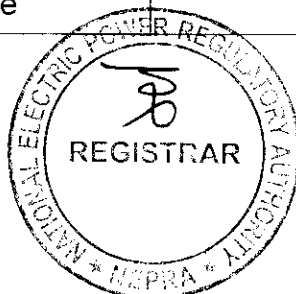
(viii).	Excepted Life of the Facility from (CoD)	Minimum 40 years. (Extendible for another period of to another 20 years)
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(C). Fuel Details

(i).	Primary Fuel	Slightly Enriched Uranium (UO ₂ 2.4% ~ 3%)
(ii).	Alternative/Back-up/ Start Up Fuel	Not Applicable (N/A)
(iii).	Fuel Source (Imported/indigenous)	Imported
(iv).	Fuel Supplier	China Nuclear Energy Industry Corporation, P.R. China.
(v).	Supply Arrangement	China Nuclear Energy Industry Corporation, P.R. China
(vi).	Fuel Assemblies	121
(vii).	Fuel Storage	Racks are used for dry storage of fresh fuel assemblies.
(viii).	Storage Capacity	48 fresh fuel assemblies can be stored in Storage Racks.

(D). Cooling System

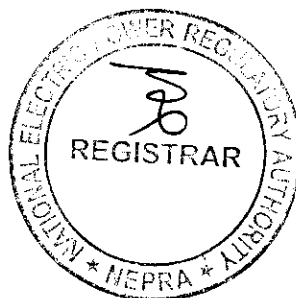
(i).	Cooling Water Source/Cycle	Chashma Jhelum Link Canal /Open Cycle
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(E). Plant Characteristics

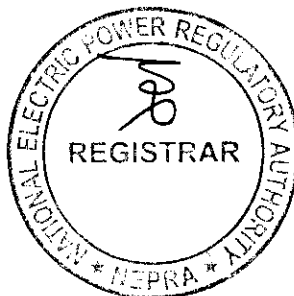
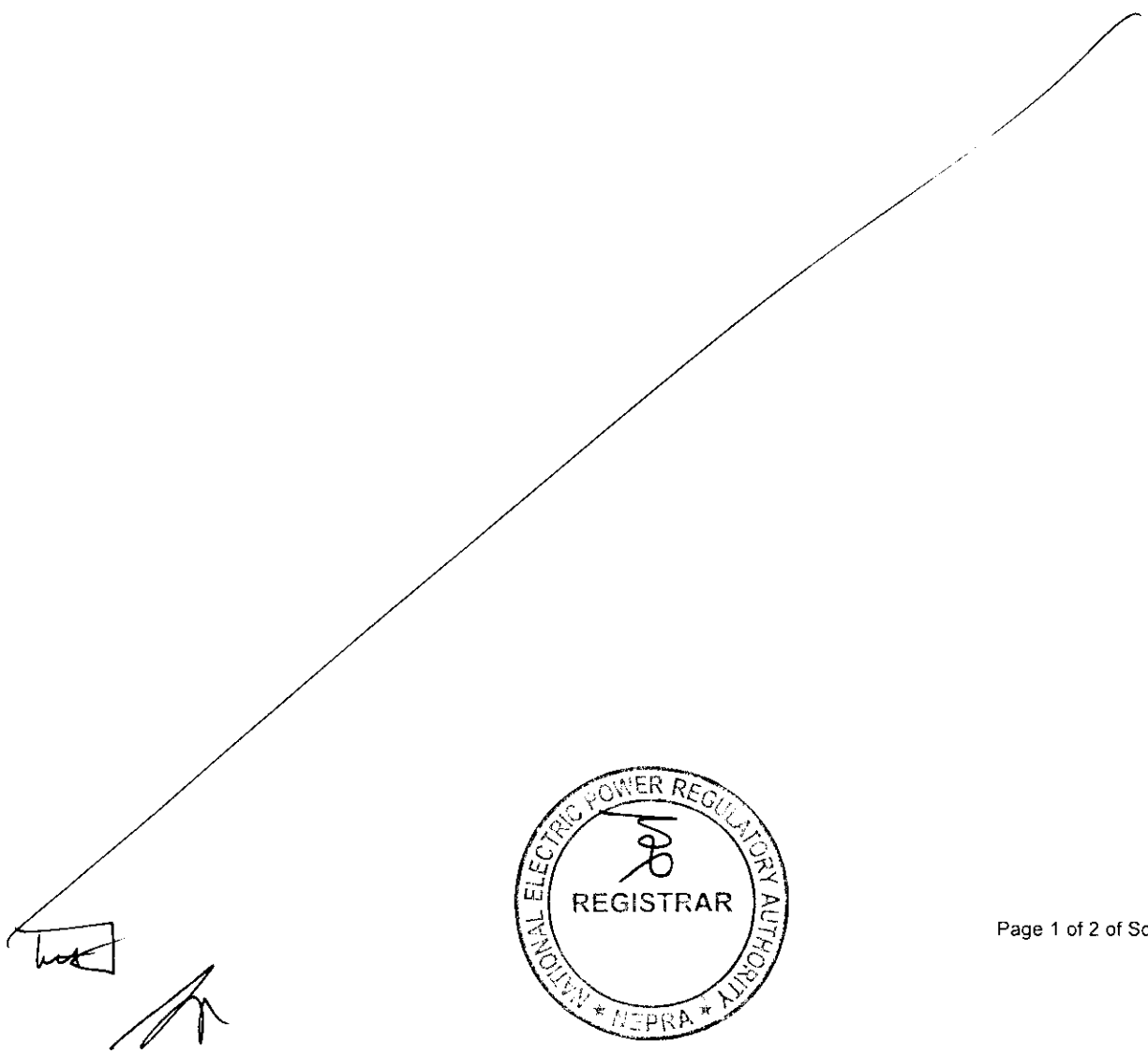
(i).	Generation Voltage	20KV \pm 5%		
(ii).	Frequency	49.50 Hz ~ 50.5 Hz		
(iii).	Power Factor	0.85 (lagging)		
(iv).	Automatic Generation control	No (C-2 is a Base Load Plant)		
(v).	Ramping Rate	Turbine Generator Load Range	Cold Start MW _e per Minute	Hot Start MW _e per Minute
		5% ~ 50%	0.6 ~ 1	-
		50% ~ 100%	-	1 ~ 3
(vi).	Time Required to Synchronize to Grid and loading the complex to full load.	6 hrs (Approx.)		

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SCHEDULE-II

The Installed, De-Rated, Auxiliary and Net Capacity of the Licensee's
Generation Facilities



SCHEDULE-II^{*}

1.	Rated Gross Installed Capacity of the Plant (1 x 340 MW _e Steam Turbine)	340.00 MW
2.	De-rated Capacity of the Plant (at 21° C)	340.00 MW
3.	Auxiliary Consumption	025.00 MW
4.	Rated Net Installed Capacity of the Plant (at 21° C)	315.00 MW

Note

All the above figures are indicative as provided by the Licensee. The Net Capacity available to NTDC for dispatch and other purchasers will be determined through procedures contained in the Power Purchase Agreement.

* As provided by the PAEC

