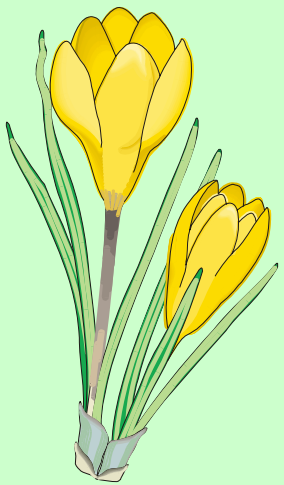
Neyveli lignite corporation ltd.

WELCOME

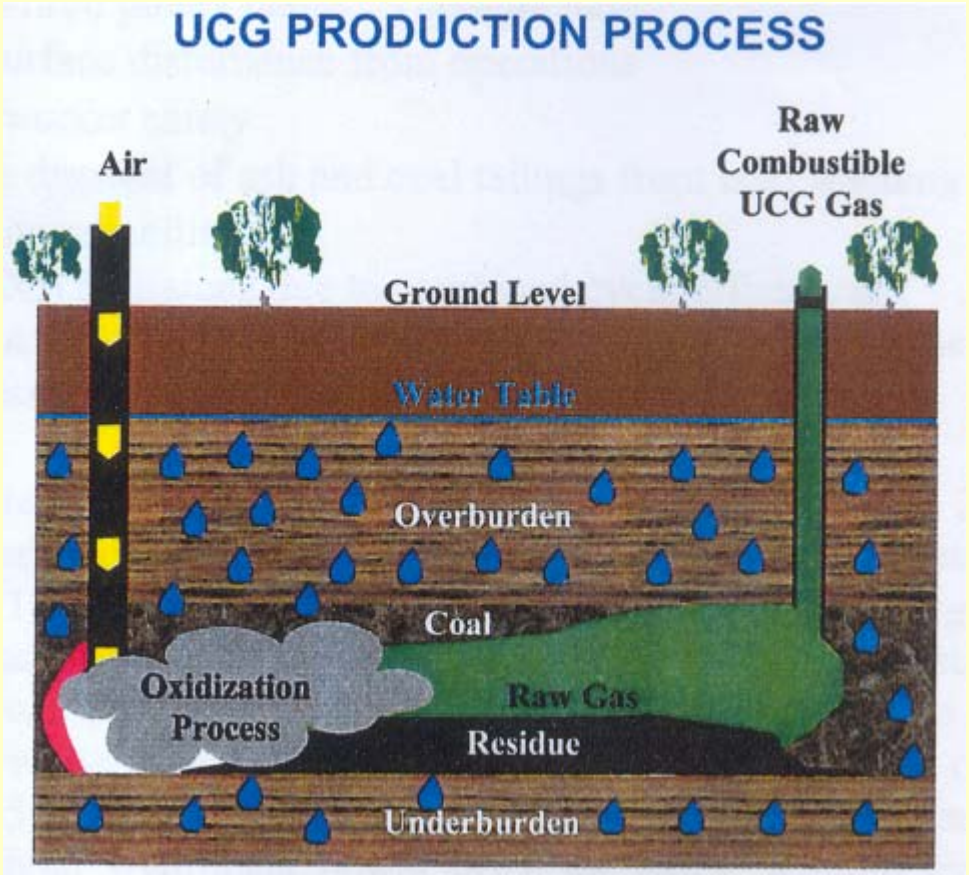
TO

PRESENTATION ON

UNDERGROUND COAL GASIFICATION PROJECT

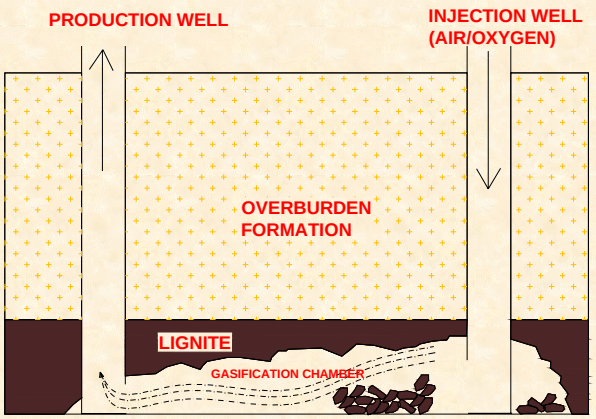


PROJECT PROPOSAL FOR UNDERGROUND COAL GASIFICATION AND ITS UTILISATION FOR POWER GENERATION STUDIES IN LIGNITE DEPOSIT OF RAJASTHAN – PHASE-I



NEYVELI LIGNTIE CORPORATION LIMITED

UNDERGROUND COAL GASIFICATION



UCG is the insitu conversion of unworkable (deep seated, thin seam, steep dipping) coal/lignite into a combustible product gas.

UCG operation is initiated by drilling two adjacent boreholes into the coal seam and injecting pressurised oxidants like hot air, oxygen or steam into the coal seam, igniting the coal seam and recovering the combustion gasses through the adjacent borehole. The connectivity between the injection and producer wells are made by special linking techniques.

INTRODUCTION

Underground Coal Gasification (UCG) is a process by which Coal/Lignite is converted in-situ to a combustible gas that can be used as a fuel or chemical feed stock.

In view of the difficulty in exploiting the lignite deposits constrained by techno economic factors the non-conventional technology such as UCG has opened up new avenue for harnessing the vast potential of these resources.

Due to site-specific nature of the UCG project a pilot scale UCG testing evaluation and economic assessment of development and utilisation are essential for implementation of full scale UCG project in Indian condition.

OBJECTIVE – PHASE - I

The following objectives have been envisaged for UCG project in the identified lignite block.

i) To study and evaluate the exploration data of certain lignite block and selection of a suitable lignite block for UCG studies.

ii) To undertake detailed exploration in selected lignite block and assess the deposit characteristics, quality and reserves and carry out specialised studies on lignite.

iii) To establish and carry out UCG pilot studies and evaluate the heat values and other characteristics of product gas.

JUSTIFICATION

India is endowed with vast lignite resources of around 36BT. A major portion of these resources occur at relatively deeper depths or constrained by one or more factors for commercial mining. Besides these, a vast area with resources at deeper horizon in the states of Rajasthan, Gujarat and Tamilnadu may significantly add to the resource base of lignite, which are yet to be explored in detail. Hence, vast amount of lignite resource lies in such depth from where it can not be mined as a profitable commodity.

In view of the difficulty in exploiting the lignite deposits constrained by techno-economic factors the non-conventional technologies such as UCG & extraction of CBM has opened up new avenues for harnessing the vast potential of these resource.

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Typically, coals of low rank e.g. lignite and sub-bituminous are the easiest to gasify, hence better suited for UCG. Underground Coal Gasification offers a potential means of extracting energy from deposits, which will not be amenable to conventional mining, economically.

The economic viability of UCG technology for Indian conditions could not be assessed on the basis of general exploration data or even on the basis of technical data of other countries. Hence, techno economic feasibility of UCG for Indian conditions can be determined only after full scale pilot study and performance evaluation.

WORK PLAN

The project is proposed to be undertaken by NLC in association with internationally reputed UCG experts (like LINC Energy, Australia, ERGO Technologies, Canada etc.) who has got expertise in the field. The works connected with the project are proposed to be carried out in 3 stages, which are outlined below:

Stage-I : Collection of preliminary data & Pre-selection study of certain lignite blocks and identification of a suitable block for gasification studies.

Stage-II: Preliminary exploration for gasification studies in selected block & Feasibility study.

Stage-III: Gasification operation and evaluation studies.

STAGE - I

Pre-selection of block

- Identification of suitable consulting/expert agency through global bidding.
- Collection on exploration data of lignite blocks in Rajasthan.
- Preliminary evaluation and selection of a suitable block based on deposit geology, hydro-geology, structure, seam thickness, quality etc.

Cost: Rs.100 Lakhs

STAGE - II

Preliminary Exploration & Feasibility study

- Taking up additional exploration in the selected block to generate site specific information.
- Undertaking feasibility study for establishment of UCG and power plant.
- Preparation of Environmental Impact Assessment (EIA) and Environment Management Plant (EMP) for the project.

Cost Rs. 320 Lakhs.

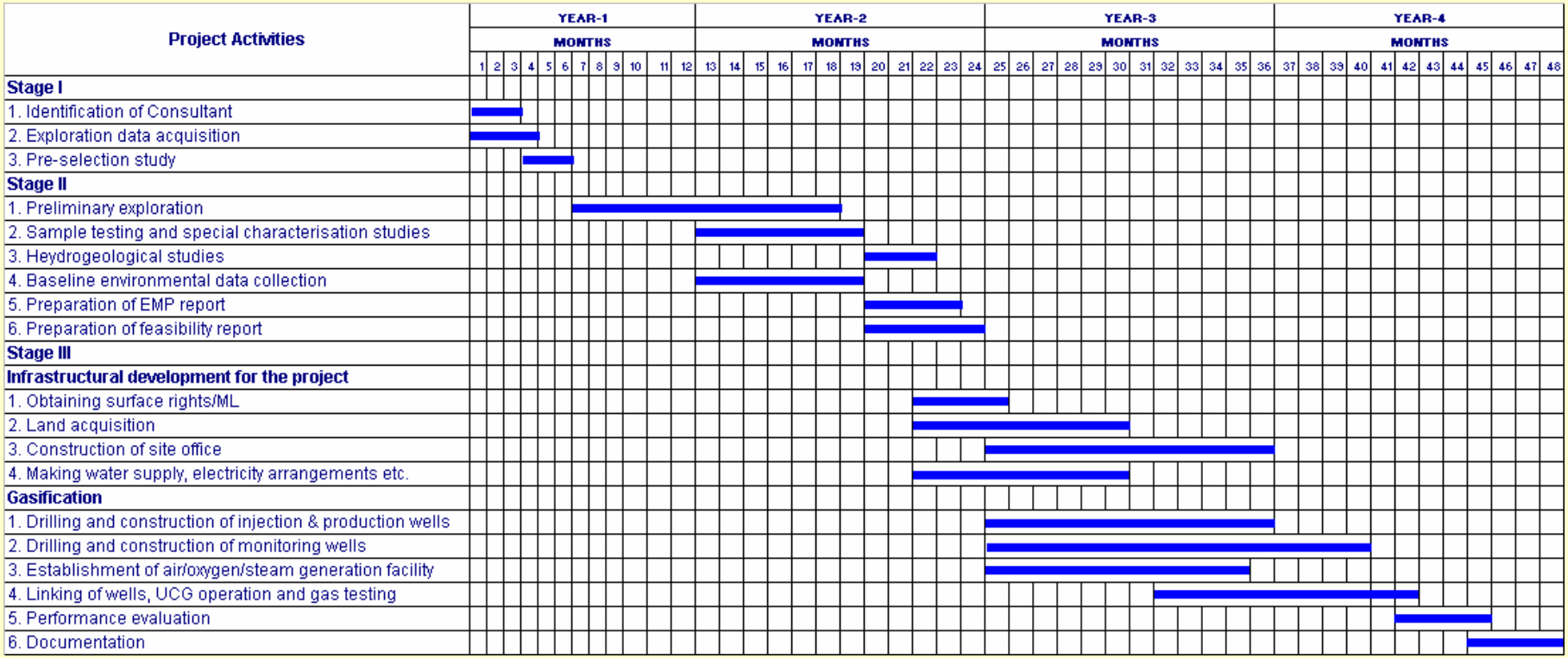
STAGE - III

Gasification Operation and Evaluation

- Drilling of construction of Injection, productions and monitoring wells.
- Linking of Injection and production wells in the lignite seam.
- Execution of gasification operation using Air/Oxygen/Steam.
- Establishment of Gas testing facility.
- Establishment of Gas monitoring facility.
- Evaluation of operation.

Cost Rs.706 Lakhs.

TIME SCHEDULE



TIME SCHEDULE

Project Activities	Month		Duration in months
Stage-I	**From**	**To**	
1. Identification of Consultant	0	3	3
2. Exploration data acquisition	0	4	4
3. Pre-selection study	4	6	3
Stage-II			
1. Preliminary exploration	7	18	12
2. Sample testing and special characterisation studies	13	19	7
3. Hydro-geological studies	20	22	3
4. Baseline environmental data collection	13	19	7
5. Preparation of EMP report	20	23	4
6. Preparation of feasibility report	20	24	5

TIME SCHEDULE

Project Activities	Month		Duration in months
Stage-III	**From**	**To**	
Infrastructural Development for the project			
1. Obtaining surface rights/ML	**22**	**25**	**4**
2. Land acquisition	**22**	**30**	**9**
3. Construction of site office	**25**	**36**	**12**
4. Making water supply, electricity arrangements etc.	**22**	**30**	**9**
Gasification			
1. Drilling and construction of injection & production wells	**25**	**36**	**12**
2. Drilling and construction of monitoring wells	**25**	**40**	**16**
3. Establishment of air/oxygen/steam generation facility	**25**	**35**	**11**
4. Linking of wells, UCG operation and gas testing	**32**	**42**	**11**
5. Performance evaluation	**42**	**45**	**4**
6. Documentation	**45**	**48**	**4**

Details of proposed outlay

Rs in Lakhs

Sl. No	Item	Total cost estimated	Stage-1	Stage-II			Stage-III		
			Years	Years			Years		
			1	1	2	3	2	3	4
	Capital Expenditure								
1	Land & Building	70	--	--	--	--	20	50	--
2	Equipments	158	--	--	20	23	27	50	38
	Total Capital	228	--	--	20	23	47	100	38
	Revenue Expenditure								
1	Salaries/ Allowance		--	--	--	--	--	--	--
2	Consumables	7	--	--	1	1	--	2	3
3	Travel	15	--	--	2	3	1	4	5
4	Others	875	100	50	220	--	--	400	105
5	Total Recurring		--	--	--	--	--	--	--
6	Total Revenue		--	--	--	--	--	--	--
7	Institute overhead		--	--	--	--	--	--	--
	Total Revenue	997	100	50	223	4	--	406	113
	Grand Total	1125	100	50	243	27	48	506	151

Year and stage wise cost abstract

(Rs. in Lakhs)

Stage	Year-1	Year-2	Year-3	Year-4	Total
I	100	--	--	--	100
II	50	243	27	--	320
III	--	48	506	151	705
Total	150	291	533	151	1125

REQUIREMENT OF NLC:

TECHNICAL CONSULTANCY FOR UCG PROJECT OF NLC IN RAJASTHAN STATE

THANK YOU