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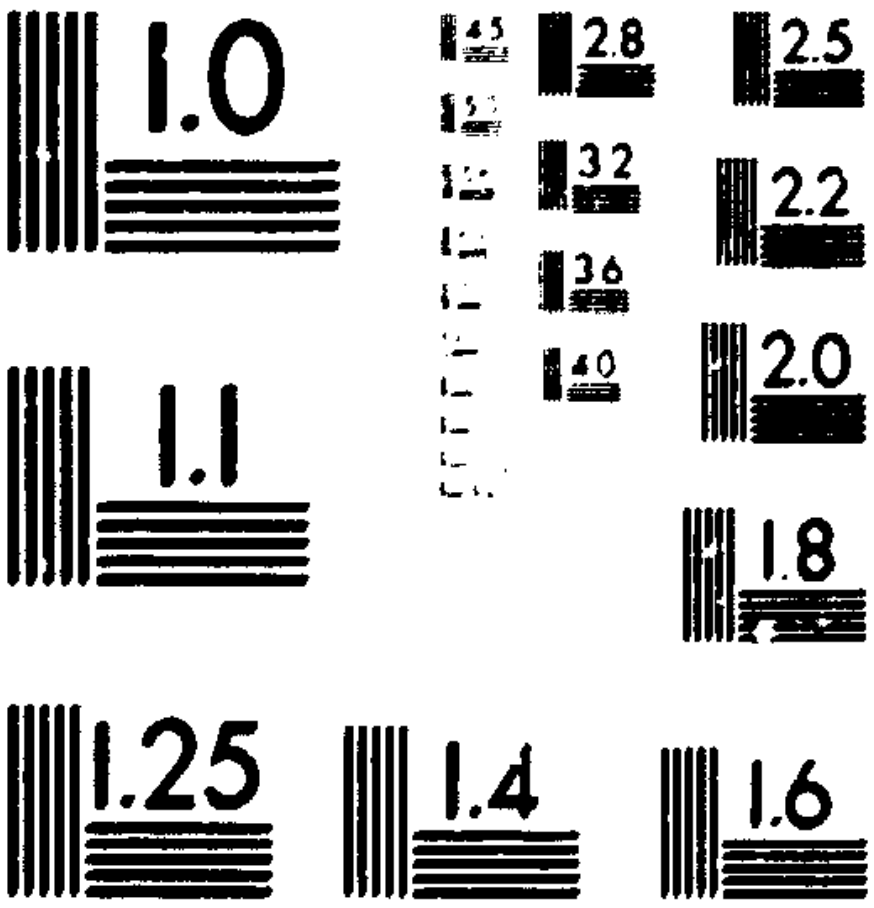

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NIPPON KOKAN K.K.

FINAL REPORT

on

India.

Design Development for an Experimental Blast Furnace

UNIDO Contract No. 84/81

Project No. DP/IND/81/035

Activity Code : DP/02/31.7

May 22, 1985

NIPPON KOAKN K.K.

3397

We have completed our services according to the Contract, Contract No. 84/81 on Design Development for Blast Furnace and are pleased to make a Final Report to you as follows;

1. Submission of Drawings

Number of copies	: Three copies to UNIDO
	Three copies to SAIL
Number of drawings	: 52 drawings each
Date of Despatch	: January 14, 1985

2. Submission of Test report

Number of copies	: Six copies to UNIDO
Date of despatch	: May 17, 1985

3. Training services

Number of engineers	: Six engineers
Training period	: April 8, 1985 to April 24, 1985
	Please refer to Annex-1
Training Man-Days	: 78 Man-Days
	Please refer to Annex-2

Text : 1) DRAWINGS FOR EXPERIMENTAL BLAST FURNACE

2) THESES ON EXPERIMENTAL B.F. TEST

(One copy each was handed to SAIL engineers in Japan.

One copy was sent to SAIL on May 22, 1985.

Three copies are enclosed to UNIDO on May 22, 1985 for your reference.)

Other material : The following materials were handed to SAIL engineers in Japan.

a. Operation data on Experimental BF at NKK's Research Center.

b. General catalogue on BF facilities at NKK's steel works.

c. Technical reports

- Kohlenstaubeinblasen in der Hochofen
- Pulverized Coal Ignition and Combustion in the Blast Furnace Tuyere Zone
- Replacement of Premium Fuels by Coal Injection at the Blast Furnace
- Einfluss der Aschen von eingeblasenen Brennstoffen auf das Schmelzverhalten von Hochofenschlacke

NIPPON KOKAN K.K.

- Coal Injection into Blast Furnace
  (Kloeckner-CRA-Tech-Group)
- New Developments in Blast Furnace Coal Injection
- Burden and Gas Flow Distribution in Blast Furnace Shaft
- Mathematical Model of Cohesive Zone in Blast Furnace and Application for Operation
- ISIJ vol 24. 1984 (B-165) Mathematical Model of 3-dimensional Gas Flow in Packed Bed
- Changes of Operation in Japan
- Changes of B.F. Profile
- Construction and Operation of No.5 B.F. Fukuyama Works
- Operation of Ohgishima No. 1 & 2 B.F.
- Current Situation and Future Prospect Blast Furnace Measurement and Control Techniques
- ISIJ April, 1983, S73 Red Zone Measurement of Sintercake
  (Development of Sintering Heat Pattern-I)
- Thermal degradation of metallurgical coke
- NKK-CORAC Process for Cold Bonded Pellets
- Development of Composite Cold Pellet for Silico-manganese Production

- Si-Mn Manufacturing Using Carbonaceous Material Containing Cold Pellets
- Die Literaturhinweise bestehen 1.A. aus folgenden Feldern
- Operation of No.5 B.F. in Fukuyama for 10 years
- Low Fuel Rate Operation at Fukuyama No.3 B.F.,NKK
- #2 B.F. Comparison of new equipment with old one
- ISIJ April 1983, S52, Experiment on Burden Distribution by 1/10 and 1/1 Scale Models
- ISIJ April 1983, S53, Development of a Simulation Model of Burden Distribution
- Adoption of Thermal state prediction system to Fukuyama No.2 B.F.
- Automatic Computer Control System of Fukuyama Sintering Plant
- Testing Method of Sinter
- How to determine the Optimum Composition of B.F. slag

As you may understand from the subjects of material listed in the above, we furnished as many materials as possible to Indian Engineers and gave them explanation in details. Our services rendered this time were surely more than the scope of the contract and we believe that our training fully satisfied Indian engineers.

ANNEX 1.

APRIL 6, 1985

Training Schedule for NKK's Experimental Blast Furnace (NKK's E-BF)

Date		Contents
APL. 8	MON	Explanation : Outline of Research Center Observation of Research Center
9	TUE	Explanation : History of NKK's E-BF Explanation : the results of NKK's E-BF
10	WED	Explanation : the results of NKK's E-BF
11	THU	Explanation : the results of Tokyo University's E-BF
12	FRI	Explanaiton : Hard Ware of NKK's E-BF
15	MON	Explanaiton : Utility, Electrical and Instrumentation of NKK's E-BF
16	TUE	Explanation : the results of NKK's Research Center
17	WED	Observation of Keihin Works, Iron Making Div.
18	THU	Explanation : the results of E-BF operation
19	FRI	Explanaiton : the test report on Indian raw materials
22	MON	Observation of Fukuyama Works, Iron Making Div.
23	TUE	Observaiton of Fukuyama Research Center
24	WED	General Discussion

ANNEX 2.

MAN-DAY CONFIRMATION SHEET

MONTH: April

YEAR: 1985

	NAME / WORKS / DATE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	TOTAL
		K																				F			K								
1	O. P. SHARMA	-	-	-	-	-	-	-	o	o	o	o	o	-	-	o	o	o	o	o	-	-	o	o	o	-	-	-	-	-	-	-	13
2	P. K. TRIPATHI	-	-	-	-	-	-	-	o	o	o	o	o	-	-	o	o	o	o	o	-	-	o	o	o	-	-	-	-	-	-	-	13
3	N. CHANDRA	-	-	-	-	-	-	-	o	o	o	o	o	-	-	o	o	o	o	o	-	-	o	o	o	-	-	-	-	-	-	-	13
4	T. M. SRINIVASAN	-	-	-	-	-	-	-	o	o	o	o	o	-	-	o	o	o	o	o	-	-	o	o	o	-	-	-	-	-	-	-	13
5	U. S. PRASAD	-	-	-	-	-	-	-	o	o	o	o	o	-	-	o	o	o	o	o	-	-	o	o	o	-	-	-	-	-	-	-	13
6	V. S. SEKRAN	-	-	-	-	-	-	-	o	o	o	o	o	-	-	o	o	o	o	o	-	-	o	o	o	-	-	-	-	-	-	-	13
7																																	
8																																	
9																																	
10	G-TOTAL																																78

DATE: April 24, 1985

COMPANY NIPPON KOKAN K.K.

Steel Authority of India Limited

SIGNATURE T.M. Srinivasan

Note: "K" means Keihin Works
"F" means Fukuyama Works
"-" means not training day
"o" means training day

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