CONTENTS

Page NO.

CHAPTER-I: INTRODUCTION

1 to 44

72 to 90

SECTION-I :

History of ammonia production

SECTION-II: Importance of carbon dioxide removal in

ammonia production

SECTION-III:

Different carbon dioxide removal system

SECTION-IV: Corrosion characteristics of carbon steel in

aqueous solutions

a) Corrosion

b) Inhibitors/ passivators

c) Evaluation of inhibitors/ passivators

CHAPTER-II: PREAMBLE OF 'STUDIES ON CORROSION OF CARBON STEEL AND ITS CONTROL

IN CARBON DIOXIDE REMOVAL SYSTEMS' 45 to 71

: Problems in carbon dioxide removal systems SECTION-I

a) Hot potash/ GV system

b) Alkanolamine system

SECTION-II: Corrosion control in carbon dioxide removal

system

a) General methods

b) Corrosion control in hot potash/ GV system

by inhibitors

SECTION-III: Corrosion problems in GV system at GSFC

Ltd.

SECTION-IV: Basis of present work

a) Outlines of the studies on corrosion problems

and its control in CO, removal

systems

b) Scope of work

CHAPTER-III: INSTRUMENTATION TECHNIQUES AND

EXPERIMENTAL PROCEDURES

SECTION-I: Instrumentation methods

a) Open circuit potential measurements

b) Polarization technique

c) A C impedance technique

SECTION-II: Experimental procedures

a) Sample preparation

b) Polarization Cell

The state of the s

- c) Test solution preparation
- d) Aeration technique
- e) Pearlite leaching studies

CHAPTER-IV: EVALUATION OF CORROSION CHARACTERISTICS OF CARBON STEEL IN GV SOLUTION AND EFFECT OF INHIBITORS

91 to 219

- a) Introduction
- b) Visual observations
- c) Observations from open circuit potential values

A STATE OF THE STA

- d) Observations from critical current density, passive current density, passive potential and primary passivating potential values
- e) Observations from corrosion current density values
- f) Observations from polarization resistance, corrosion rate and inhibitor efficiency values
- g) Observations from zonal characteristics graphs
- h) Observations from photomicrographs of pearlite leaching studies
- Observations from polarization resistance and double layer capacitance values from AC impedance studies
- j) Observations from experiments carried out using plant GVSL solutions after dosage of antimony trioxide
- k) Brief summary

CHAPTER-V: DISCUSSION

220 to 261

CHAPTER-VI: CONCLUSIONS AND SCOPE FOR FURTHER STUDY

262 to 265

- a) Conclusions
- b) Scope for further study

SUMMARY

I to X

LIST OF PUBLICATIONS/PRESENTATIONS

ΧI