TABLE OF CONTENTS

5 A.c. corrosion - Results and discussion of laboratory tests
Peter Cohn - Dong, Denmark, F. Stalder - Schweizerische Gesellschaft für Korrosionsschutz, Switzerland

6 A.c. corrosion induced by V.H.V electrical lines on polyethylene coated steel gas pipelines
I. Ragault - Gaz de France, France

7 Alternating current corrosion on cathodically protected steel in soil - A long-term field investigation
Göran Camitz, Charlotte Johansson and Åsa Marbe, Sweden

SUMMARY

A new corrosion phenomenon has been added to the list of corrosion phenomena, and it is related to a.c. currents.
These usually result from a.c. voltages induced into the pipeline where the pipeline route is in parallel with, or crosses, high voltage power lines or electrified railways.
The implications of the influence of alternating currents on buried pipelines are of great concern to all pipeline owners in Europe. The relevance of the interference is always increasing; for operational personnel (touch and step voltages); adverse effects to cathodic protection equipment and for the protection of buried metallic structures from corrosion.
Among the factors that contribute to increased a.c. voltages on buried pipelines are:

- growing number of high voltage power lines
- a.c. operated high speed traction systems
- high isolation resistance of modern pipeline coatings.

On pipelines suffering from a.c. interference traditional pipe-to-soil potential measurements DO NOT GUARANTEE efficient cathodic protection against corrosion. A specific approach to assess the effectiveness of cathodic protection should be adopted.
Further laboratory research is still needed to explain the basic mechanisms of a.c. corrosion, mainly in order to determine methods for assessing the a.c. corrosion risk.
The main aims of this booklet are:

- to inform technical people of the problems
- show that there is a real risk of a.c. corrosion on buried pipelines
- provide examples of practical actions to reduce/minimise corrosion risks.

Safety aspects related to a.c. influence on pipelines are not covered in this booklet. (see references 1 and 2).
Some laboratory and field experiences are illustrated in this booklet, the conclusions drawn should not be considered as final since the experiments are still in progress.
The real nature of the a.c. corrosion phenomenon has not yet been fully investigated.