CHAPTER 1

INTRODUCTION

1.1 BACKGROUND OF RESEARCH

The application of paint on iron substrates is a very efficient method of anti-corrosion protection. They are used in many aggressive media such as sea water, marine and industrial environment (Nadia.H, 2011). It is a common fact that in order to achieve a long-life coating system, a zinc primer needs to be applied as the first coat. For solvent-based zinc-rich paints (ZRPs), it seems to be established that, at least at the beginning of immersion, zinc particles provide a cathodic protection of the steel substrate (Nadia.H, 2011) (C.M. Abreu, 1996). Then, a long term protection develops due to the formation of zinc corrosion products, reinforcing the barrier effect of the paint (Nadia.H, 2011) (Morcillo, 1990). The metallic zinc content in the dry film is a very important parameter to be emphasized in the technical specifications of zinc-rich paints.

The objectives this research is to find out the effectiveness of different thickness of zinc paint in different salinity. However, as observed by Lindquist et al., (Lindquist, 1985) this parameter is not the only factor determining the performance of this kind of paint. For example, Fragata (Fragata, 1987) Del Amo (Amo, April 1990) and Pereira (Pereira, 1990) verified that the chemical nature of the binder and the zinc particle size are also very important.
1.2 PROBLEM STATEMENT

Many manufactures industries now depend on paint and coatings for the long lasting strength, protection and improvement to increase pipeline safety and reduce incidents and related costs for many years and, in fact, have made significant improvements to corrosion detection, assessment, and mitigation technology. Serious attacks appears in warm coast regions, where high salinity and high relative humidity increases the development of filiform corrosion. Filiform corrosion is only present in the atmosphere and occurs especially at a relative humidity of 85% to 95%. Hence it is important to use coating at the outer and inner layer of the pipelines.

1.3 OBJECTIVES OF RESEARCH

Objectives of this research are:
1. To investigate the suitable thickness of the layer which is the most be effectiveness of different thickness spray paint in different salinity.
2. To determine the best coating material between fluorocarbon-coated or zinc-coated to be used in oil and gas industry.

1.4 STATEMENT OF CONTRIBUTION

The approach for this research is based on a comprehensive examination of effectiveness the suitable thickness of the layer which is the most effectiveness in order to protect coated metal in high salinity.