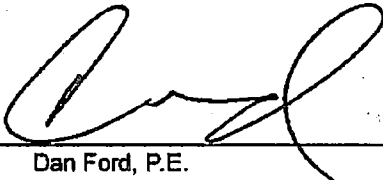
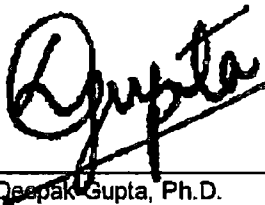


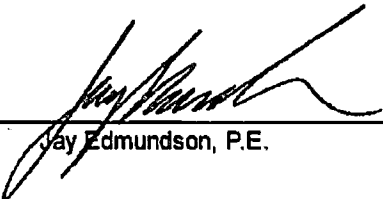
Palo Verde Nuclear Generating Station - APS Aux Hoist Reeving Calculations

Morris Material Handling
Calculation # 36676-26
Customer PO # 500556483

Revision # 05

Author:  Date: September 28, 2017
Dan Ford, P.E.

Checker:  Date: September 28, 2017
Deepak Gupta, Ph.D.

Approver:  Date: September 28, 2017
Jay Edmundson, P.E.

Adjusted Methodology section
Changed Calc Title
Added calc # and revision to all pages

2	Adjusted seismic factor Changed rope specs to reflect design changes Updated drum analysis to reflect design changes	January 31, 2013
3	Updated References section Updated drum analysis to reflect design changes Updated calculation to address comments	February 3, 2017
4	Added Section 5.3.5 Added note to Section 5.1 to reflect comments Updated References section	September 1, 2017
5	Added Section 5.3.4.4	September 28, 2017

TABLE OF CONTENTS

<u>Chapter No.</u>	<u>Chapter Description</u>	<u>Page No.</u>
1.0	Purpose	4
2.0	Methodology	4
3.0	Assumptions	4
4.0	References	5
5.0	Normal Operation Calculations	6
— 5.1	Hook Assembly	6
— 5.2	Rope	9
— 5.3	Bottom Block	12
— 5.4	Upper Block	28
— 5.5	Drum	56
6.0	Broken Rope Calculations	73
— 6.1	Rope	73
— 6.2	Bottom Block	73
— 6.3	Upper Block	81
7.0	Conclusion	105
Attachment 1	Wire Rope Data	106
Attachment 2	Bearing Life Calculation	108
Attachment 3	Letter Regarding Hoist Speeds	109
Attachment 4	Hydraulic Cylinder Pressure Ratings	110
Attachment 5	Comment Resolution	111
Attachment 6	Comment Resolution	112
Attachment 7	Quadrant Engineering Sheave Design	114
Attachment 8	Cope Plastics Engineering Materials	117
Attachment 9	Comment Resolution	118

1. PURPOSE

Evaluate the aux hoist reeving system for the 35 ton Single Failure Proof containment building polar crane and verify that it meets the requirements of the specification as given in Ref. 9.

The Remaining 118 pages
are considered Proprietary