Q. **Re: HRD - Install Operator Training Simulator (Tab 5)**

Please provide the cold start costs for 2006 through 2010. Please provide what the "optimal" costs of a cold start are and how the optimal starting costs were determined.

A. Please refer to the following table representing the total annual cost for Unit and Plant Cold Starts for the period of 2006 through 2010:

Unit Cold Starts

Year	Unit	# of Starts	Total Cost
2006	1	2	$141,903
	2	2	$97,148
	3	1	$89,141
2007	1	1	$48,342
	2	2	$145,138
	3	2	$134,397
2008	1	7	$476,184
	2	2	$129,301
	3	1	$74,688
2009	1	1	$55,337
	2	3	$204,061
	3	1	$106,870
2010	1	1	$76,091
	2	4	$344,235
	3	1	$81,798

Plant Cold Starts

Year	Unit(s)	# of Starts	Total Cost
2006	1	1	$108,131
2007	1, 3	2	$158,674
2008	2	1	$93,517
2009	1	1	$114,489
2010	1	1	$119,293

The least cost cold start for a particular unit from 2006 through 2010 was for Unit 1 in 2008 where 82 barrels of light oil and 575 barrels of Bunker C oil were used during a cold unit start for a total cost of $50,264. This particular event indicates the volume of oil consumed for what can be considered an optimal cold start for a unit.

An optimal unit cold start can be described as the starting of a unit under the following conditions:

1. Operators do not experience abnormal incidents during the starting sequence with which they are unfamiliar thus leading to delays.
2. No mechanical incidents occur that are outside the control of the operators and have to be resolved before the sequence can continue.
3. The volumes of light oil and Bunker C oil used are the minimal amounts needed for the starting sequence of the particular unit (bearing in mind that Units 1 and 2 operate slightly different than Unit 3).

The cost for a unit or plant cold start can vary subject to the cost of light oil and Bunker C oil at the time in addition to the aforementioned variables. Considering the variables that can impact the starting of a unit, the use of a training simulator can serve to optimize conditions 1 and 3 as stated above. Consistent practice on a training simulator, using various problem scenarios, will help operators develop skills in resolving unusual incidents during start-up to minimize starting duration and determine the optimal parameters to start and run the unit to use the least amount of fuel.