

- 1 Q. **Project: Holyrood – Upgrade Excitation Systems Units 1 and 2 \$1,110,000**
- 2 Reference: Report to the PUB, “*Upgrade Excitation Systems Unit 1 and 2, Holyrood,*
- 3 *May 2013*”
- 4 a) Table 1 on page 4 lists 15 spare parts which would be replaced with the
- 5 proposed upgrade. Since installation, what has been the consumption for
- 6 each of these 15 parts?
- 7 b) There are two combined I/O in stock and the safety level is zero. What is
- 8 the cost to purchase an extra set of the other 14 items?
- 9 c) Section 3.2.5 on page 5 states that utilities in Indiana and Washington have
- 10 upgraded from the Unitrol P. Do these utilities have any spare parts or
- 11 spare units?
- 12
- 13
- 14 A. a) The consumption for each of these 15 parts is given in Table 1, below.

Table 1: On Site Spare Parts Consumption since Installation

Description	Part Number	Consumption Since Installation
Power Supply 120V, 250W	PS AC/DC	0
Power Supply 250V,250W	PS DC/DC	0
Digital ArcNet	UPC090	3
Binary Input	UFC092	0
Output relay	ARC093	0
Valve Measuring Card	UNC4672	0
Valve Measuring Card	UNC4673	0
I/O Connection Unit	UNC4674	0
Control Electronics PPC322	HIEE300900R0001	4
Power Pack	KUC321	1
Pulse Generator	GDB021	1
Combined I/O	UAC326	0
Control Panel	AFC094	0
Crowbar Firing Circuit	UNS017A (Ver. 1)	0
Converter Electronics Card	UNS3670	6

- 1 b) The cost to purchase, in 2013, an extra set of the other 14 items is \$97,028.
2 The cost breakdown is in Table 2.

Table 2: Spare Parts Cost

Description	Part Number	Cost
Power Supply 120V, 250W	PS AC/DC	4,282
Power Supply 250V,250W	PS DC/DC	3,146
Digital ArcNet	UPC090	4,044
Binary Input	UFC092	3,762
Output relay	ARC093	2,030
Valve Measuring Card	UNC4672	6,436
Valve Measuring Card	UNC4673	7,036
I/O Connection Unit	UNC4674	3,110
Control Electronics PPC322	HIEE300900R0001	26,016
Power Pack	KUC321	7,560
Pulse Generator	GDB021	5,640
Control Panel	AFC094	9,346
Crowbar Firing Circuit	UNS017A (Ver. 1)	4,080
Converter Electronics Card	UNS3670	10,450
Total		\$97,028

- 3 c) Hydro did not contact other utilities to see if they have spare parts or spare
4 units. Hydro's recommendation is to purchase two new controllers so that
5 there is full service support and spare parts availability from ABB, Inc.
6 Spare parts available from an upgrade at another utility would have been in
7 service or on the shelf in inventory and may be subject to an increased
8 failure rate due to age.