Date SECTION 13400

 Project Number MEASUREMENT AND CONTROL INSTRUMENTATION

 Project Name Page 1

PART 1 GENERAL

 1.1 Section includes

A. Dissolved Oxygen for monitoring in the range of 0 to 2000 ppb for nuclear applications

 1.2 Measurement Procedures

A. The method of measurement will be Luminescent measurement technology.

* 1. The sensor is coated with a luminescent material.
	2. An Active fluorescent spot is excited with blue light and a red luminescent light is detected from the spot.
	3. Increased oxygen in the sample decreases the time taken for the spot’s fluorescence to decay and this correlates directly to the oxygen concentration in the sample.

 1.3 Alternates

A. Other methods of Dissolved Oxygen measurement are not acceptable.

 1.4 System Description

A. Performance Requirements

* 1. Measurement range:0 to 2000 ppb (indicative trend up to 5000 ppb)
	2. Accuracy : ± 0.8 ppb or 2% whichever is greater
	3. Limit of detection: 0.6 ppb minimum
	4. Resolution: 0.1 ppb
	5. Repeatability: ± 0.4 ppb or 1% whichever is greater 6. Response time < 10 s(gas phase) ; < 30s (in water)

 1.5 Environmental Requirements

A. Operational Criteria

* 1. Sample pressure: 1 to 20 bar abs (14.5 to 290 psia)
	2. Sample temperature: -5 to 50 degrees C
	3. Storage temperature: -5 to 100 degrees C
	4. Operating humidity: 5 to 95 percent non-condensing

 1.6 Warranty

A. The product includes a one-year warranty from the date of shipment.

PART 2 PRODUCTS

 2.1 Manufacturer

A. Hach Company, Loveland, CO

* 1. Model K1200 Luminescent Dissolved Oxygen sensor
	2. Model 510 controller

 Date SECTION 13400

 Project Number MEASUREMENT AND CONTROL INSTRUMENTATION

 Project Name Page 2

 2.2 Manufactured Unit

1. The sensor shall continuously measure the concentration of oxygen (O2) in de-aerated water
2. The measurement technology shall be luminescent measurement technology.
3. The measuring range shall be from 0 to 2000 ppb O2, with indicative trend up to 5000 ppb)
4. The minimum detection limit shall be 0.6 ppb O2.
5. The accuracy shall be ±0.8 ppb or 2% of the measured value, whichever is greater.
6. The response time (90%) shall be less than 10 seconds for gas phase and less than 30 seconds for water process.
7. The calibration method for the sensor shall be gas phase calibration.
8. The calibration frequency should be of 12 months or better with a measurement interval of 2 seconds
9. The sensor shall be model Orbisphere K1200 Luminescent Dissolved Oxygen Sensor manufactured by Hach Company

Accessories

 2.3

A. Sensor Cable 5 m (16.4 Ft)

PART 3 EXECUTION

 3.1 Preparation

1. Wall mount or Panel mount
2. Clearances: none required.
3. Storage temperature: -5 to 100 degrees C

 3.2 Installation

1. Contractor will install the K1200/510 analyzer in strict accordance with the manufacturer’s instructions and recommendation.
2. Manufacturer’s representative will include a half-day of start-up service by a factory-trained technician.
	1. Contractor will schedule a date and time for start-up.
	2. Contractor will require the following people to be present during the start-up procedure. a. General contractor
		1. Hach Company factory trained representative
		2. Owner’s personnel

END OF SECTION