

# AUTOMATED LOW LEVEL TRITIUM IN WATER MONITOR REAL TIME CONTINUOUS

自动低辐射水氚监测器

实时连续

Model ~ Nex-Tritium-H2O

## FEATURES: 特点

- LOW LEVEL TRITIUM  
低浓度氚
- SENSITIVE TO 0.2  $\mu\text{Ci/l}$  Tritium  
对0.2  $\mu\text{Ci/l}$ 氚灵敏
- REAL TIME – AUTOMATIC  
实时-自动
- EXCELLENT LONG TERM STABILITY  
卓越长期稳定性
- CONTINUOUS MONITORING  
连续监测
- NOT INFLUENCED BY OTHER NUCLIDES  
不受其它核素影响
- NO LIQUID SCINTILLANT REQUIRED  
无需液体闪烁液
- EASY CALIBRATION  
容易校准
- NEW STATISTICAL SIGNIFICANCE DISPLAY  
新统计学意义显示
- RUGGED, CASTER MOUNTED  
坚固，带轮子
- IP 42



**Nex-Tritium-H2O  
Electronics**



**Two Pairs of Matched  
Photo Multiplier  
Tubes**

## APPLICATION: 应用

- MEETS EPA DRINKING WATER LEVELS  
符合 EPA 应用水标准
- MONITOR LEAKS IN CANDU TYPE REACTORS MONITOR TRITIUM  
监测坎杜堆泄露氚监测器
- CONTAMINATION IN GROUND WATER.  
地下水污染
- MONITOR LABORATORY OR PLANT LIQUID WASTE STREAM.  
监测实验室或电站液体流出物



**TECHNICAL ASSOCIATES  
OVERHOFF TECHNOLOGY**

7051 Eton Ave., Canoga Park, CA 91303  
818-883-7043 (Phone) 818-883-6103 (Fax)

[tagold@nwc.net](mailto:tagold@nwc.net)

[WWW.TECH-ASSOCIATES.COM](http://WWW.TECH-ASSOCIATES.COM)

Divisions of  US NUCLEAR CORP.

# AUTOMATED LOW LEVEL TRITIUM IN WATER MONITOR REAL TIME CONTINUOUS

自动低辐射水氚监测器

实时连续

Model ~ Nex-Tritium-H2O

## DESCRIPTION: 说明

This system consists of a light tight detector assembly which is interfaced with the sample via male 1/8" pipe fittings with the readout and processor assembly via two BNC connectors.

系统密光探头组件通过1/8" 管件对接样品，通过两个BNC连接件与读数器和微处理器组件连接。

The sample is passed through a filter and thence to the detector assembly, where it is viewed by two pairs of matched photo multiplier tubes.

样品通过过滤器然后到达探头组件，由一组匹配的光电倍增管观测。

The table top or rack mounted processor and display portion of this system conditions and analyzes the output from the photo multiplier tubes by pulse height and validated by a coincidence circuit, thereby permitting the system to eliminate counting most background (noise) counts.

此系统的桌面或架装处理器和显示部分通过脉冲高度和耦合事件修正并分析光电倍增管输出，因此允许系统排除大部分本底噪音。

**MEETS CFR/NRC REGULATION OF 1.0  $\mu$ Ci/L (H-3)**

符合CFR/NRC1.0  $\mu$ Ci/L (H-3)的规定

**Nex-Tritium includes unique statistical Significance Display.**

**NEX-氚包括独特的统计学意义显示**

- This function rates strength of the data preventing most false positives or negatives:
- 此功能避免了大多数的虚报
  - Significance : **HIGH, LOW, or NOT SIGNIFICANT.**
  - 显著性：高，低，或不显著



**TECHNICAL ASSOCIATES  
OVERHOFF TECHNOLOGY**

7051 Eton Ave., Canoga Park, CA 91303  
818-883-7043 (Phone) 818-883-6103 (Fax)

[tagold@nwc.net](mailto:tagold@nwc.net)

[WWW.TECH-ASSOCIATES.COM](http://WWW.TECH-ASSOCIATES.COM)

Divisions of  US NUCLEAR CORP

# AUTOMATED LOW LEVEL TRITIUM IN WATER MONITOR REAL TIME CONTINUOUS

自动低辐射水氚监测器

实时连续

Model ~ Nex-Tritium-H2O

## UNIQUE NEX-TRITIUM DETECTOR CHARACTERISTICS

### NEX-TRITIUM 显著特点

FEATURE 功能	PURPOSE 功能
<b>Ultra High Sensitivity Achieved Through the Following Physical Features:</b> 基于以下功能系统具有极高灵敏度	
Custom Made Anthracene Scintillation Crystals in Technical Associates' Laboratories TA 公司实验室客户定制蒽闪烁晶体	High Beta Sensitivity 高 β 灵敏度
Two (2) 5" Diameter Optical Sensor Arrays (Totaling 200 cm <sup>2</sup> ) Sensitive Area 2 个直径 5" 光学传感器并列，总灵敏面积 200 cm <sup>2</sup>	High Count Rate 高计数率
Special Data Analysis 专用数据分析	As Described in Sensitivity Chart 见灵敏度表格
Guard Detector 宇宙射线探头	Cosmic Ray Rejection 宇宙射线抑制
Four (4) Photo Sensors 4 个光电感测器	True Tritium Pulse Validation 真正氚脉冲验证
Five (5) Flow Channels 5 个样品通道	Assures Smooth Continuous Flow 确保连续样品流
Temperature Controlled Detector Cooler 探测器温控器控制温度	Long Term Accurate Signal Stability 长期精确信号稳定性
Steel, Bronze, and Lead Shielding 钢、铜、铅屏蔽	Gamma Ray Background Rejection 伽马射线本底抑制
Real-Time Temperature Compensation Sensor 实时温度补偿感测器	Improved Sensitivity & Stability 提高了的灵敏度和稳定性



**TECHNICAL ASSOCIATES  
OVERHOFF TECHNOLOGY**

7051 Eton Ave., Canoga Park, CA 91303  
818-883-7043 (Phone) 818-883-6103 (Fax)

[tagold@nwc.net](mailto:tagold@nwc.net)

[WWW.TECH-ASSOCIATES.COM](http://WWW.TECH-ASSOCIATES.COM)

Divisions of  US NUCLEAR CORP

# AUTOMATED LOW LEVEL TRITIUM IN WATER MONITOR REAL TIME CONTINUOUS

自动低辐射水氚监测器

实时连续

Model ~ Nex-Tritium-H2O

TRITIUM SENSITIVITY 氚灵敏度		
PicoCuries	MicroCuries	Time to Count
2,000,000 pCi/l	2.0 $\mu$ Ci/l	2 minutes
500,000 pCi/l	0.5 $\mu$ Ci/l	20 minutes
200,000 pCi/l	0.2 $\mu$ Ci/l	3 hours
100,000 pCi/l	0.1 $\mu$ Ci/l	24 hours
20,000 pCi/l	0.02 $\mu$ Ci/l	7 days
10,000 pCi/l	0.01 $\mu$ Ci/l	14 days
Display updates every 2 minutes 显示没两分钟更新		

## FLOW CHART 流量表

1. Chiller 冷却器
2. Refrigerated Detector & Amplifiers to Sustain Constant Low Temperature  
冷藏探头&放大器以维持低温
3. Flow Cell – 5” Diameter  
样品流室-直径 5”
4. Photo Multiplier Tube  
光电倍增管
5. Guard Detector  
宇宙射线探测器

## FEATURES OF SENSOR SYSTEM 感测器系统功能

- Real-Time Temperature Detection & Correction
- 实时温度检测和更正
- Real-Time Dynamic Gamma Background Detector.
- 实时动态  $\gamma$  本底探测器



**TECHNICAL ASSOCIATES**

**OVERHOFF TECHNOLOGY**

7051 Eton Ave., Canoga Park, CA 91303

818-883-7043 (Phone) 818-883-6103 (Fax)

[tagold@nwc.net](mailto:tagold@nwc.net)

[WWW.TECH-ASSOCIATES.COM](http://WWW.TECH-ASSOCIATES.COM)

Divisions of



US NUCLEAR CORP

# AUTOMATED LOW LEVEL TRITIUM IN WATER MONITOR REAL TIME CONTINUOUS

自动低辐射水氚监测器

实时连续

Model ~ Nex-Tritium-H2O

## SPECIFICATIONS:

<b>Display Update:</b>	Every 2 minutes.
显示更新:	每2分钟
<b>Tritium Sensitivity:</b>	See Tritium Sensitivity Chart above
氚灵敏度:	见氚灵敏度表格
<b>Range:</b>	20,000 - 20,000,000 pCi/liter Optional : Other ranges higher or lower.
量程:	可选择更高或更低量程
<b>Flow Rate:</b>	Minimum -1 ml/min
流量:	最小-1 ml/分钟 Maximum-100 ml/min 最大-100 ml/min
<b>Sample Temperature:</b> Standard -	< 80°F (liquid); (optional - to 115°F)
样品温度:	标准-< 80°F (液体); (可选 - 达 115°F)
<b>Ambient Temperature:</b>	Detector - < 80°F ( <b>Optional</b> - to 115°F) Readout-< 115°F
环境温度:	探头< 80°F (可选- 到 115°F) 读数器-< 115°F
<b>Lead Shielding:</b>	1" thick is standard 2" thick is optional
铅屏:	1" 标准厚度, 可选2"

## WEIGHT & DIMENSIONS:

<b>Dimensions:</b>	Electronics: 电子学	23"H x 16"L x 21" W
	Detector: 探头	12"H x 10"D x 27" W
	Pump: 泵	10"H x 10"D x 6" W
尺寸:		
<b>Weight (Standard Unit):</b>	Detector Housing:	35 lbs. (Unshielded)
	Electronics Housing:	40 lbs.
	Pump:	8 lbs
重量 (标准型号):	探头组件	35磅 (无铅屏), 电子学组件40磅, 泵8磅
<b>Shipping Weight:</b>		90 lbs.
邮寄重量:		

➤ **Weight and Dimensions shown above do not include Sample Chiller and Refrigeration Unit.**

以上重量和尺寸不包括冷却单元。

**Optional Shielding:** 65 lbs.

可选屏蔽:



**TECHNICAL ASSOCIATES**

**OVERHOFF TECHNOLOGY**

7051 Eton Ave., Canoga Park, CA 91303

818-883-7043 (Phone) 818-883-6103 (Fax)

[tagold@nwc.net](mailto:tagold@nwc.net)

[WWW.TECH-ASSOCIATES.COM](http://WWW.TECH-ASSOCIATES.COM)

Divisions of  US NUCLEAR CORP

# AUTOMATED LOW LEVEL TRITIUM IN WATER MONITOR REAL TIME CONTINUOUS

自动低辐射水氚监测器

实时连续

Model ~ Nex-Tritium-H2O

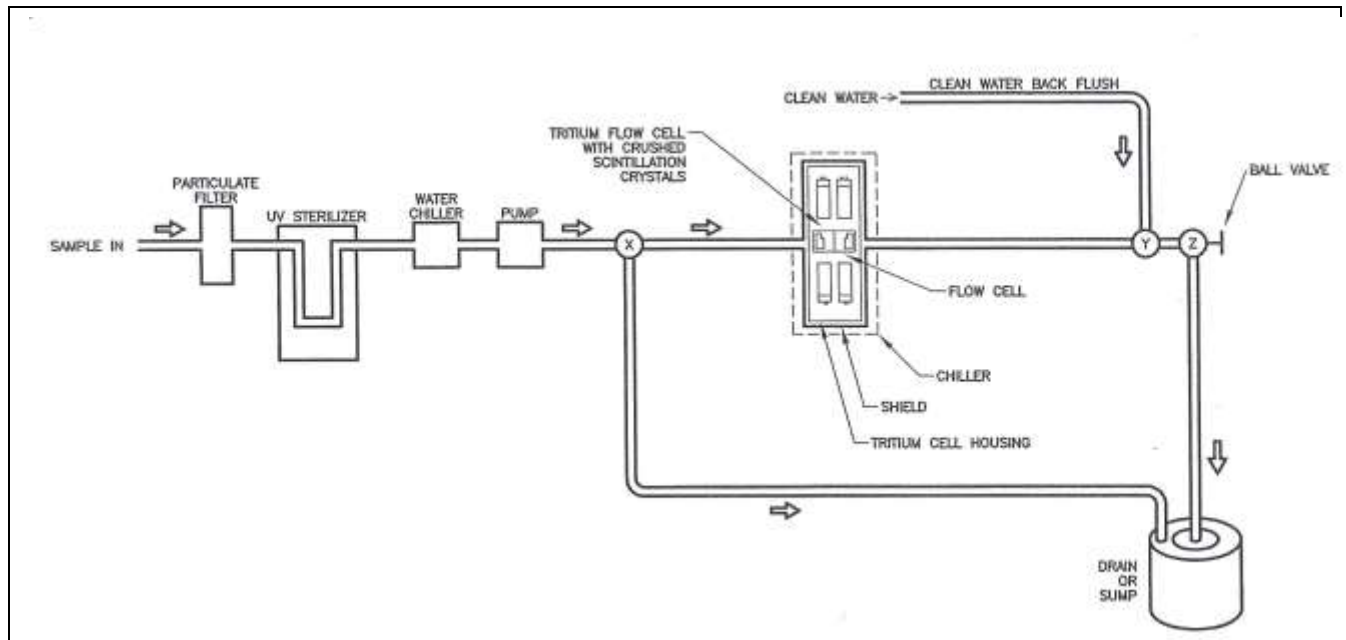
Display: 5" color monitor

显示:

## OPTIONS 可选项:

- Data Archive and Data Retrieval; records readings for up to 5 years.
- 数据存储与检索，记录保存达5年
- Remote readout via Ethernet
- 通过以太网远程显示读数
- Network reporting and communication via the ORO overdrive network
- 通过ORO网络报告和通信
- "Deionizer and Filter" specification (SSS-33M8/D and SSS-33M8/F).
- 去离子器和过滤器规格 (SSS-33M8/D 和 SSS-33M8/F).

## NEX-TRITIUM FLOW CHART



**IF YOU HAVE TRITIUM IN WATER & OIL MIXTURES:  
WE RECOMMEND THIS STRATEGY FOR MEASUREMENT OF TRITIUM**

如果水&油混合物有氚，我们推荐用这种方式进行氚测量。



**TECHNICAL ASSOCIATES**

**OVERHOFF TECHNOLOGY**

7051 Eton Ave., Canoga Park, CA 91303

818-883-7043 (Phone) 818-883-6103 (Fax)

[tagold@nwc.net](mailto:tagold@nwc.net)

[WWW.TECH-ASSOCIATES.COM](http://WWW.TECH-ASSOCIATES.COM)

Divisions of



US NUCLEAR CORP.

# AUTOMATED LOW LEVEL TRITIUM IN WATER MONITOR REAL TIME CONTINUOUS

自动低辐射水氚监测器

实时连续

Model ~ Nex-Tritium-H2O

## STRATEGY 方法

Tritium is radioactive hydrogen, and hydrogen atoms regularly jump or exchange between different adjacent molecules.

In a mixture of normal water mixed with tritiated oil, both components will, over time, share the Tritium equally.

氚是辐射氢，氢原子有规律地跳动，在不同邻近分子间交换。正常水与含氚油的混合物，一段时间后，氚会均匀地分布在两种成分里。

In **LIQUID** Samples, this allows a separation strategy, in which we, 在液体样品中，这种特征允许我们使用分离方法：

1. Pull a sample from the mixture  
从混合物中取样
2. Run this sample through an oil-water separator  
用油-水分离器进行样品分离
3. Collect the relatively clean water  
收集相对干净水样
4. Pull this water into the SSS-33M81 tritium measurement flow cell  
将此水样放入SSS-33M81样品腔里进行氚测量
5. Get a good reading  
得出精确读数
6. Without contaminating or degrading the cell  
样品腔不受污染。

In **GASEOUS** Samples, the same principles apply. 此原理使用与气态样品

1. A vapor separation system is utilized.  
使用气体分离系统
2. A [PTG-9](#) Tritium Measurement Ion Chamber is used to make the measurements.  
使用PTG-9测氚电离室进行测量

**PLEASE CONTACT US WITH INFORMATION ON YOUR SITUATION.  
WE WILL ADVISE &/OR QUOTE ON A SUITABLE SYSTEM TO OBTAIN YOUR OBJECTIVE.**  
具体事宜请联系我们，我们会根据您的实际情况选择合适仪器并报价。



**TECHNICAL ASSOCIATES  
OVERHOFF TECHNOLOGY**

7051 Eton Ave., Canoga Park, CA 91303  
818-883-7043 (Phone) 818-883-6103 (Fax)

[tagold@nwc.net](mailto:tagold@nwc.net)

[WWW.TECH-ASSOCIATES.COM](http://WWW.TECH-ASSOCIATES.COM)

Divisions of  US NUCLEAR CORP