

NMR PIPETECTOR Installation Report, in UK

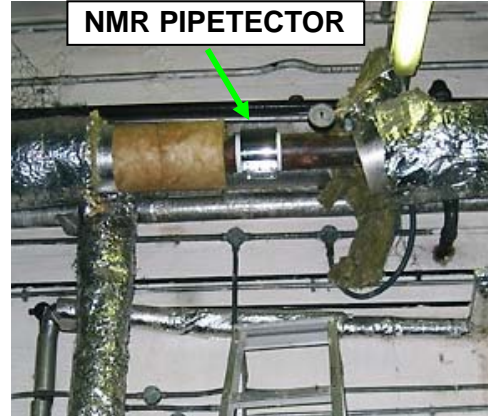
Anti-Corrosion Application, Whittington Hospital, located in London UK

NMR Corporation

***Appearance of Building and Installation Place**



Appearance of the building



Header pipe of domestic hot water

< Installation Purpose and Result >

The Whittington Hospital is one of the largest hospitals in North London and was built during the 1860s, Block 'C' which is the main boiler plant room for the entire hospital complex has existing iron pipe work which is mostly 30 to 40 years old, the domestic hot water supplies the Day Surgery, Administration and Sterile Services Areas within Block 'C'.

For the protection of all the hot water domestic pipes from internal corrosion in Block 'C', one NMR unit of 4 inch diameter (PT-100DS) was installed onto the header pipe of the domestic hot water system situated in the boiler plant room.

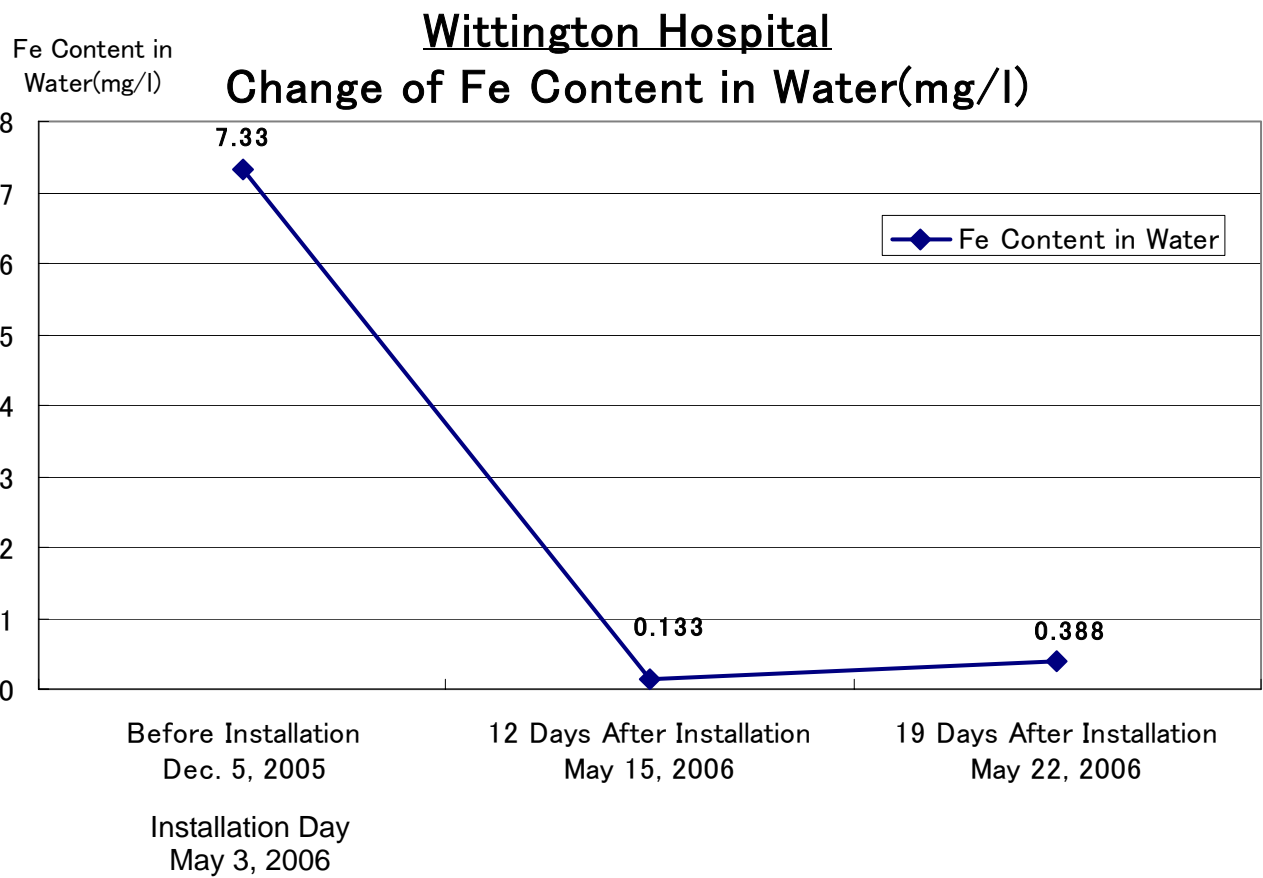
Only 12 days after the installation of NMR Pipetector, the Fe content in hot water considerably decreased from **7.33mg/l** (before the installation of NMR Pipetector) to **0.133mg/l**, and 29 days after the installation, the Fe content decreased to **0.077mg/l** which is much lower than the British Government Standard for Drinking Water of 0.2mg/l. It means that new forming of corrosion (FeO(OH)) inside of the pipe work was immediately terminated, and the existing corrosion was reduced to magnetite (Fe₃O₄) which is not dissolved into the water and protects the inside of the pipe from corrosion.

< Installation Summary >

| | |
|---|--|
| Name of Building :Address | Whittington Hospital Highgate Hill, London, UK |
| Building Summary | New hospital building, and domestic hot water system is connected to the old hospital buildings. The hospital was built during 1860s. |
| Installation Place | Domestic hot water header pipe in the boiler room in Block 'C' |
| Installation Day | May 3 rd in 2006 |
| Installation Place Number of installed NMR PIPETECTOR | 4 inch diameter header pipe of domestic hot water (Steel Galvanized Pipe) PT-100DS×1unit |



<Fe ion content in hot water (mg/l)>

| | | | | | | |
|------------------------|--|------------------------------------|---|---|--|---|
| | Before Installation Dec. 5, 2005 | Installation Day May 3, 2006 | 12 Days After Installation May 15, 2006 | 19 Days After Installation May 22, 2006 | 29 Days After Installation Jun. 1, 2006 | The British Government Standard for Drinking Water |
| Fe Content In Water | 7.33 mg/l | | 0.133 mg/l | 0.388 mg/l | 0.077 mg/l | 0.2 mg/l |



Before Installation

Certificate of Analysis

1314
0897
1228
1510

Sample 3 Laboratory Number: 186988
of 3 Report Number: BR/3156888/2005 Issue 1

Sample Source: Cambridge Water Company
Sample Point Description: Cambridgeshire Water Company
Sample Description: Whittington Hospital

Sample Date: 05 December 2005 Sample Received: 05 December 2005 Analysis Complete: 13 December 2005

| Test Description | Result | Units | Limit | Accreditation | Method |
|-------------------|--------|-------|-------|---------------|--------|
| Iron, Total as Fe | 7330 | ug/l | 200 | B | SBC44 |



Accreditation Codes: * = Not UKAS accredited, B = Analysed at STL Bridgend, C = Analysed at STL Coventry, R = Analysed at STL Runcorn, L = Analysed at STL Midlands, S = Sub-contracted
For Microbiological determinands 0 or ND = Not Detected, DET = Detected, For Legionella ND=Not detected in volume of sample filtered US = insufficient sample

Signed: *R Robins*

Name: R. Robins Date: 14 December 2005
Title: Senior Chemist

12 Days After Installation

Certificate of Analysis

1314
0897
1228
1510

Sample 3 Laboratory Number: 395931
of 3 Report Number: BR/345546/2006 Issue 1

Sample Source: Cambridge Water Company
Sample Point Description: Cambridgeshire Water Company
Sample Description: WHITTINGTON C BLOCK

Sample Date: 15 May 2006 Sample Received: 15 May 2006 Analysis Complete: 18 May 2006

| Test Description | Result | Units | Limit | Accreditation | Method |
|-------------------|--------|-------|-------|---------------|--------|
| Iron, Total as Fe | 133 | ug/l | 200 | B | SBC44 |

Accreditation Codes: * = Not UKAS accredited, B = Analysed at STL Bridgend, C = Analysed at STL Coventry, R = Analysed at STL Runcorn, L = Analysed at STL Midlands, S = Sub-contracted
For Microbiological determinands 0 or ND = Not Detected, DET = Detected, For Legionella ND=Not detected in volume of sample filtered US = insufficient sample



Signed: *T Down*

Name: T. Down Date: 01 June 2006
Title: Production Manager

Whittington 3-4(20080226)

19 Days After Installation

Certificate of Analysis

1314
0897
1229
1510

Sample 3 Laboratory Number: 407521
of 3 Report Number: BR/347123/2006 Issue 1

Sample Source: Cambridge Water Company
Sample Point Description: Cambridgeshire Water Company
Sample Description: WHITTINGTON NHS TRUST DAY SURGERY
Sample Date: 22 May 2006 Sample Received: 22 May 2006 Analysis Complete: 24 May 2006



| Test Description | Result | Units | Limit | Accreditation | Method |
|-------------------|--------|-------|-------|---------------|--------|
| Iron, Total as Fe | 388 | ug/l | 200 | B | SBC44 |

Accreditation Codes: * = Not UKAS accredited, B = Analysed at STL Bridgend, C = Analysed at STL Coventry, R = Analysed at STL Runcorn, L = Analysed at STL Midlands, S = Sub-contracted
 For Microbiological determinands 0 or ND = Not Detected, DET = Detected, For Legionella ND=Not detected in volume of sample filtered. IS = Insufficient sample

Signed: *T. Down* Name: T. Down Date: 25 May 2006
 Title: Production Manager

29 Days After Installation

Certificate of Analysis

1314
0897
1229
1510

Sample 4 Laboratory Number: 423364
of 4 Report Number: BR/349382/2006 Issue 1

Sample Source: Cambridge Water Company
Sample Point Description: Cambridgeshire Water Company
Sample Description: WHITTINGTON NHS TRUST-CLEAN UTILITY
Sample Date: 01 June 2006 Sample Received: 01 June 2006 Analysis Complete: 06 June 2006

| Test Description | Result | Units | Limit | Accreditation | Method |
|-------------------|--------|-------|-------|---------------|--------|
| Iron, Total as Fe | 77 | ug/l | 200 | B | SBC44 |

Accreditation Codes: * = Not UKAS accredited, B = Analysed at STL Bridgend, C = Analysed at STL Coventry, R = Analysed at STL Runcorn, L = Analysed at STL Midlands, S = Sub-contracted
 For Microbiological determinands 0 or ND = Not Detected, DET = Detected, For Legionella ND=Not detected in volume of sample filtered. IS = Insufficient sample

Signed: *R. Robins* Name: R. Robins Date: 06 June 2006
 Title: Senior Chemist

Whittington 4-4(20080226)