

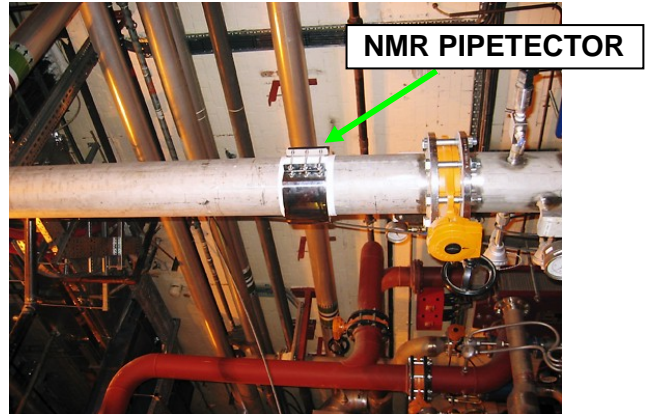
NMR PIPETECTOR Installation Report, in UK Anti-Corrosion Application, Harrods, located in London

NMR Corporation

*Appearance of Building and Installation Place



Appearance of the building



Header pipe of domestic hot water

< Installation Purpose and Result >

Harrods Department Store is situated in Knightsbridge, London and is the Worlds most famous department store, and first opened in 1849. The domestic hot water pipe work in Harrods is approximately 25 to 30 years old and is manufactured from galvanized steel and was experiencing a problem with red rust and discolored water within the domestic hot water supply throughout the building, which was the result of internal corrosion in the pipes.

For the protection of the hot water pipe work from corrosion, one NMR unit of 6 inch (PT-150DS) was installed onto a 168mm outer diameter common hot water header pipe that is connected with two plate heat exchangers.

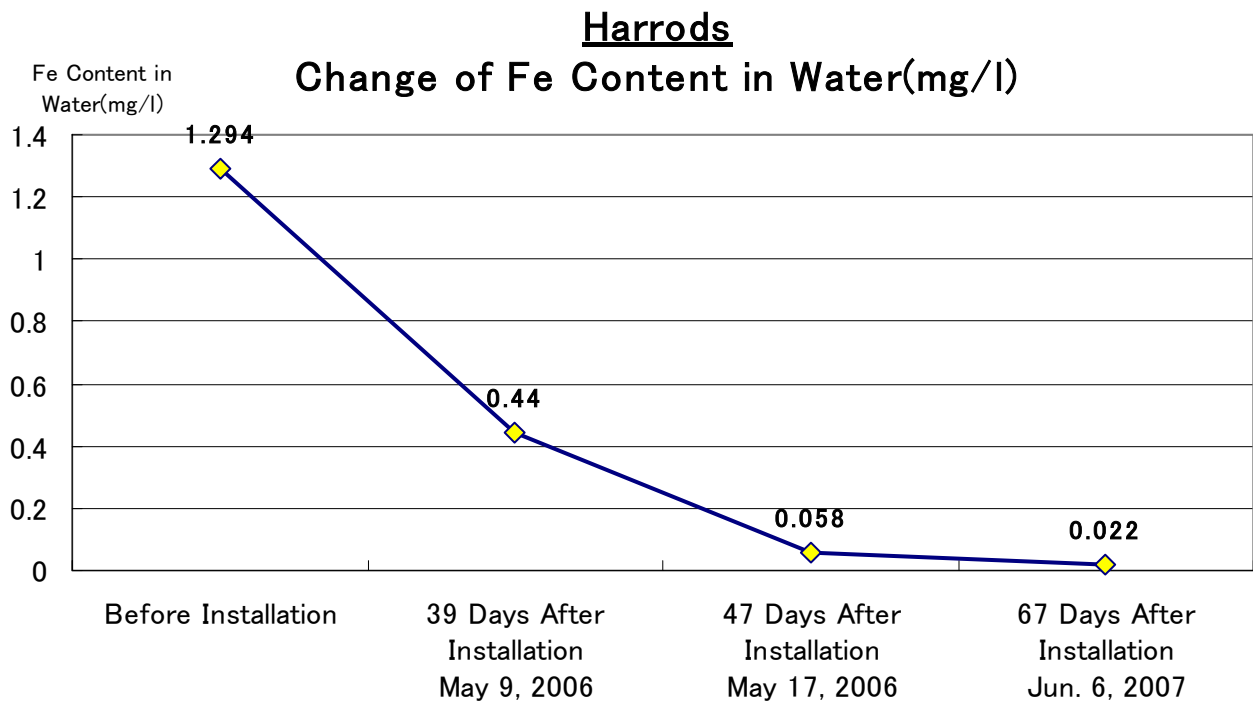
Only 39 days after the installation of NMR Pipetector, the Fe content in hot water decreased from **1.294mg/l** (before the installation of NMR Pipetector) to **0.44mg/l**, and 47 days after the installation, the Fe content decreased to **0.058mg/l**, and 67 days after the installation, the Fe content decreased to **0.022mg/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	Harrods (Department Store) 87-135 Brompton Road, Knightsbridge, London, UK
Building Summary	The world's most famous department store. The department store first opened in 1849.
Installation Place	Common hot water header pipe that is supplied by two plate head exchangers.
Installation Day	March 31 st in 2006
Installation Place Number of installed NMR PIPETECTOR	168 mm outer diameter header pipe of domestic hot water (Steel Galvanized Pipe) PT-150DSx1unit

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




	Before Installation Feb. 6, 2006	Installation Day Mar/ 31 2006	39 Days After Installation May 9, 2006	47 Days After Installation May 17, 2006	67 Days After Installation Jun. 6, 2006	The British Government Standard for Drinking Water
Fe Content in Water	1.294 mg/l		0.44 mg/l	0.058 mg/l	0.022 mg/l	0.2 mg/l



Fe ion content
in water (mg/l)

Before Installation

Certificate of Analysis

1314
0897
1229
1510

Sample **2** Laboratory Number : **259709**
of **5** Report Number : **BR/326022/2006** Issue **1**




Sample Source : **Cambridge Water Company**
Sample Point Description : **Cambridgeshire Water Company**
Sample Description : **Harrods Dept Store Domestic Hot Water Staff Kitchen**
Sample Date : **06 February 2006** Sample Received : **06 February 2006** Analysis Complete : **10 February 2006**

Test Description	Result	Units	Limit	Accreditation	Method
Iron, Total as Fe	1294	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

39 Days After Installation

Certificate of Analysis

1314
0897
1229
1510

Sample **3** Laboratory Number : **386985**
of **3** Report Number : **BR/344300/2006** Issue **1**

Sample Source : **Cambridge Water Company**
Sample Point Description : **Cambridgeshire Water Company**
Sample Description : **HARRODS**
Sample Date : **09 May 2006** Sample Received : **09 May 2006** Analysis Complete : **12 May 2006**

Test Description	Result	Units	Limit	Accreditation	Method
Iron, Total as Fe	440	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 : *Down* Name : **T. Down** Date : **12 May 2006**
Title : **Production Manager**

Harrods 3-4(080226)

47 Days After Installation

Certificate of Analysis

SEVERN TRENT
ENVIRONMENTAL LEADERSHIP

CAMBRIDGE WATER COMPANY

UKAS
1314
0897
1228
1510

Sample 1 Laboratory Number : 400332
of 1 Report Number : BR/346143/2006 Issue 1


Sample Source : Cambridge Water Company
Sample Point Description : Cambridgeshire Water Company
Sample Description : PETER GOSLING-HARRODS

Registered office:
90 Fulbourn Road
Cambridge CB1 9JN
Tel: 01223 70 60 50

Sample Date : 17 May 2006 Sample Received : 17 May 2006 Analysis Complete : 19 May 2006

Test Description	Result	Units	Limit	Accreditation	Method
Iron, Total as Fe	58	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:  Name: T. Down Date: 22 May 2006
Title: Production Manager

67 Days After Installation

Certificate of Analysis

SEVERN TRENT
ENVIRONMENTAL LEADERSHIP

STL

UKAS
1314
0897
1228
1510

Sample 2 Laboratory Number : 430508
of 2 Report Number : BR/350389/2006 Issue 1


Sample Source : Cambridge Water Company
Sample Point Description : Cambridgeshire Water Company
Sample Description : Harrods

Registered office:
90 Fulbourn Road
Cambridge CB1 9JN
Tel: 01223 70 60 50

Sample Date : 08 June 2006 Sample Received : 06 June 2006 Analysis Complete : 08 June 2006

Test Description	Result	Units	Limit	Accreditation	Method
Iron, Total as Fe	22	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:  Name: T. Down Date: 09 June 2006
Title: Production Manager

Harrods 4-4(080226)