

Our Ref: 451998450 jg

26 March 2013

NAQWA PTY LTD  
249030, Shatskogo, 11  
Russian Federation  
OBNINSK, KALUJSKIY REGION  
MOSCOW

ATTENTION: FELIX ZANICHKOVSKIY

Re: MICROBIOLOGICAL VERIFICATION STUDY QUOTE REF: 24091439

### ***Introduction***

NAQWA Pty Ltd approached Silliker on the the 18<sup>th</sup> of February 2013 to perform microbiological testing on their “Series NAQWA Track Membrane Filter” with the intention of assessing the effectiveness of this system in removing bacteria and chemicals from water to render it suitable for drinking.

Please refer to Quote reference: 24091439 for detailed information on test methodology. As directed by NAQWA Pty Ltd, the test methodology was conducted according to principles set out in the following supplied report.

“Anti-Plague Station of Medical and Sanitary Unit No. 164 of the Federal Biomedical Agency of Russia’s, Protocol of Certification Tests No. 8/12 dated 25.09.12” (See appendix 1)

### ***Method overview***

Sufficient quantities of sterile deionized water seeded with specific microorganisms to a density of 10<sup>5</sup>cfu/100mLs were prepared and then filtered through the “Series NAQWA Track Membrane Filter”. The resulting filtrate was then analysed according to appropriate Silliker Australia methods for enumeration of the remaining microorganisms.

Counts obtained pre and post filtrations were tabulated and percentage (%) reduction and log reduction for each organism was calculated and reported.

The trial was conducted on the following microorganisms –

- *Escherichia coli* - derived from NCTC 8196 – Silliker culture #20
- *Escherichia coli* - derived from ATCC 8739 – Silliker culture #256
- *Enterobacter cloacae* – derived from NCTC 10005 – Silliker culture #149
- *Pseudomonas aeruginosa* – derived from ATCC 9027 – Silliker culture #254

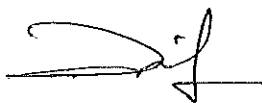
## Results

Organism	Pre-filtration (cfu/100mL)	MeanCount (cfu/100mL)	Post-filtration (cfu/100mL)	Mean count (cfu/100mL)	Percentage (%) Reduction	Log reduction (Log Pre – Post Counts)
<i>E.coli</i> NCTC 8196	500,000	470,000	360	390	99.92	3.1
	450,000		410			
<i>E.coli</i> ATCC 8739	380,000	390,000	303	290	99.93	3.1
	400,000		272			
<i>E.cloacae</i> NCTC 10005	680,000	660,000	660	640	99.90	3.0
	640,000		625			
<i>P.aeruginosa</i> ATCC 9027	210,000	210,000	20	16	99.99	4.1
	210,000		12			

## Comments

Results obtained indicate that “Series NAQWA Track Membrane Filter” achieved a log reduction of at least 3.0 logs (99.9% reduction) against the above prescribed test organisms when tested according to methodology outlined in Silliker Protocol / Quote reference: 24091439.

## Appendix 1 (Refer to attached)



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 MICROBIOLOGIST

TGA Licence No. 77007

The data pertains solely to the analytical and sampling procedure(s) used and the condition and homogeneity of the sample(s) as received. The data therefore may not be representative of the lot or batch or other samples. Consequently the data may not necessarily justify the acceptance or rejection of a lot or batch, a product recall or support legal proceedings. It is the responsibility of the client to provide all information relevant to the analysis requested. This report does not imply that Silliker Australia Pty Ltd has been engaged to consult upon the consequences of the analysis and for any action that should be taken as a result of the analysis.

Anti-Plague Station of Medical and Sanitary Unit No.164  
of the Federal Biomedical Agency of Russia

**ACCREDITED TESTING LABORATORY CENTRE**

142279, Obolensk town, Serpukhovskiy district, Moscow region.

**GOST R Certification System.**

Accreditation Certificate No. ГСЭН.РУ.ЦОА/ЦА.3/03, registered in State Registry  
No. POCC RU.0001.510578, valid till the 12<sup>th</sup> of March, 2014.

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**PROTOCOL OF CERTIFICATION TESTS No. 8/12 dated  
25.09.12**

**Name:** Water purifier "Series "NAQWA" Track Membrane Filter"

**Manufacturer's Name:** "NAQWA" Limited Liability Company, Obninsk city.

**Applicant's Name:** "NAQWA" Limited Liability Company, Obninsk city.

**Intended Use:** Water purifier "Series "NAQWA" Track Membrane Filter" is intended to be used for after-purification of drinking water from centralized and non-centralized drinking water supply systems and also for purification of water from surface and underground sources of centralized utility and drinking water supply from solid particles and chemical impurities, according to microbiological parameters, total iron, improvement of organoleptic properties.

**Dates of Testing:** 17.09.12 to 21.09.12

**Regulatory Documents:**

GOST 18963-73: "Drinking water. Methods of sanitary-bacteriological analysis."

SanPiN (Sanitary Standards) 2.1.4.1074-01 "Drinking water. Hygienic requirements to quality of water from centralized drinking water supply systems. Quality control".

MG (Methodological Guideline) 4.2.1018-01 "Sanitary-microbiological analysis of drinking water".

GOST R 51871-2002 "Water treatment units. General requirements to efficiency and methods of its determination".

GOST R 51232-98 "Drinking water. General requirements to organization and methods of quality control".

MG (Methodological Guideline) 2.1.4.2898-11 "Sanitary and epidemiological studies (tests) of materials, reagents and equipment used for water purification and water treatment."

**Purpose of testing:**

To determine the ability of water purifier "Series "NAQWA" Track Membrane Filter" to purify water from bacteria.

**Characteristics of water to be purified:**

Model water volumes were prepared using dechlorinated tap water that met the requirements stipulated in SanPiN (Sanitary Standards) 2.1.4.1074-01 "Drinking water. Hygienic requirements to quality of water from centralized drinking water supply systems. Quality control".

**Testing conditions:**

Suspensions of model microorganisms were transferred to dechlorinated tap water and concentration of these model microorganisms was determined in accordance with the standard of the Russian State Institute of Medical and Biological Preparations named after L.A. Tarasevich. Concentration of viable cells in water was determined by plating of Petri dishes with solid medium and membrane filter method (GOST 18963-73, MG (Methodological Guideline) 4.2.1018-01).

E.coli strain pSub525, E.coli strain 1257, Enterobacter cloacae and Pseudomonas aeruginosa microorganisms were used as bacteria model.

Purifier was prewashed with not less than 1 l of dechlorinated tap water.

Test samples of "infected" water, the volume of which was 1 liter, were passed through water purifier. Rate of water passage was 2 l per hour.

**Test results:**

Results of tests on determination of ability of water purifier "Series "NAQWA" Track Membrane Filter" to purify water from bacteria are shown in table 1.

Table 1. Results of tests of water purifier "Series "NAQWA" Track Membrane Filter".

Simulated contaminant	Used microorganism	Concentration of microorganism in water before water purifier		Concentration of microorganism in water after water purifier		Efficiency of purification, %
		Calculated concentration	Measured concentration	Titration method	Membrane filter method	
Total microbial count	E.coli. strain 1257, E.coli strain pSub525, Enterobacter cloacae, Pseudomonas aeruginosa	10 <sup>5</sup> per 100 ml	1,24 x 10 <sup>5</sup> per 100 ml	Absent	Absent in 100 ml	100

Bacteria	E.coli. strain 1257	10 <sup>5</sup> per 100 ml	1.13 x 10 <sup>5</sup> per 100 ml	Absent	Absent in 100 ml	100
	E.coli strain pSub525	10 <sup>5</sup> per 100 ml	1.67 x 10 <sup>5</sup> per 100 ml	Absent	Absent in 100 ml	100
	Enterobacter cloacae	10 <sup>5</sup> per 100 ml	1.82 x 10 <sup>5</sup> per 100 ml	Absent	Absent in 100 ml	100
	Pseudomonas aeruginosa	10 <sup>3</sup> per 1000 ml	1.92 x 10 <sup>3</sup> per 1000 ml	Absent	Absent in 1000 ml	100

As is evident from the data shown in table 1, the efficiency of purification of model microorganism suspension of E.coli strain 1257, E.coli strain pSub525, Enterobacter cloacae and Pseudomonas aeruginosa with concentration of microorganisms of 1.82 x 10<sup>5</sup> per 100 ml in water purifier "Series "NAQWA" Track Membrane Filter" was 100%.

Chief of bacteriological laboratory                      /signature/                      Borzenkova T.Kh.

Head of Testing Laboratory Center,  
Chief Doctor of the Anti-Plague Station  
of Medical and Sanitary Unit No.164                      /signature/                      Dobrokhotskiy O.N.

/Seal: Federal Biomedical Agency, Anti-Plague Station of Medical and Sanitary Unit No.164/

## CONCLUSION

Ability of water purifier "Series "NAQWA" Track Membrane Filter" to purify water from bacteria was tested in accredited Testing Laboratory Center of the Anti-Plague Station of Medical and Sanitary Unit No.164.

E.coli strain pSub525, E.coli strain 1257, Enterobacter cloacae and Pseudomonas aeruginosa were used as model microorganisms.

Performed tests (Protocol No. 8/12 dated 25.09.12) allow to conclude that the efficiency of purification of model microorganism suspension of E.coli strain pSub525, E.coli strain 1257, Enterobacter cloacae and Pseudomonas aeruginosa with concentration of microorganisms of  $1.82 \times 10^5$  per 100 ml in water purifier "Series "NAQWA" Track Membrane Filter" was 100%.

Head of Testing Laboratory Center,  
Chief Doctor of the Anti-Plague Station  
of Medical and Sanitary Unit No.164

/signature/

O.N. Dobrokhotskiy

/Seal: Federal Biomedical Agency, Anti-Plague Station of Medical and Sanitary Unit No.164/