

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY  
(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference 1567.02	<b>FOR FURTHER ACTION</b>		See item 4 below
International application No. PCT/US2006/041453	International filing date ( <i>day/month/year</i> ) 25 October 2006 (25.10.2006)	Priority date ( <i>day/month/year</i> ) 25 October 2005 (25.10.2005)	
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237			
Applicant AJT & ASSOCIATES, INC.			

<p>1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a).</p> <p>2. This REPORT consists of a total of 4 sheets, including this cover sheet.</p> <p>In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.</p>																								
<p>3. This report contains indications relating to the following items:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 5%; text-align: center;"><input checked="" type="checkbox"/></td> <td style="width: 30%;">Box No. I</td> <td>Basis of the report</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table> <p>4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).</p>	<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input type="checkbox"/>	Box No. II	Priority	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input type="checkbox"/>	Box No. VIII	Certain observations on the international application
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The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Date of issuance of this report 29 April 2008 (29.04.2008)
Facsimile No. +41 22 338 82 70	Authorized officer <p style="text-align: center; font-size: 1.2em;">Yoshiko Kuwahara</p> e-mail: pt07.pct@wipo.int

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

## PCT

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To:  
THOMAS E. TONER  
SMITH & HOPEN, P.A.  
180 PINE AVENUE NORTH  
OLDSMAR, FL 34677

Date of mailing  
(day/month/year) **28 JUN 2007**

Applicant's or agent's file reference  
1567.02

**FOR FURTHER ACTION**  
See paragraph 2 below

International application No.  
PCT/US06/41453

International filing date (day/month/year)  
25 October 2006 (25.10.2006)

Priority date (day/month/year)  
25 October 2005 (25.10.2005)

International Patent Classification (IPC) or both national classification and IPC  
IPC: **B01D 35/14**( 2006.01)  
USPC: 210/86,202,241,192,96.1,151,103,149

Applicant  
AJT & ASSOCIATES, INC.

1. This opinion contains indications relating to the following items:

- Box No. I Basis of the opinion
- Box No. II Priority
- Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- Box No. IV Lack of unity of invention
- Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- Box No. VI Certain documents cited
- Box No. VII Certain defects in the international application
- Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/ US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201	Date of completion of this opinion 15 June 2007 (15.06.2007)	Authorized officer Mr. Terry K. Cecil <b>Jean Proctor</b> Telephone No. (571) 272-1700 <b>Paralegal Specialist</b>
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WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/US06/41453

**Box No. I Basis of this opinion**

1. With regard to the **language**, this opinion has been established on the basis of:

- the international application in the language in which it was filed  
 a translation of the international application into \_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

- a sequence listing  
 table(s) related to the sequence listing

b. format of material

- on paper  
 in electronic form

c. time of filing/furnishing

- contained in the international application as filed.  
 filed together with the international application in electronic form.  
 furnished subsequently to this Authority for the purposes of search.

3.  In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.  
PCT/US06/41453

**Box No. V Reasoned statement under Rule 43 bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims <u>7-26</u>	YES
	Claims <u>1-6</u>	NO
Inventive step (IS)	Claims <u>NONE</u>	YES
	Claims <u>1-26</u>	NO
Industrial applicability (IA)	Claims <u>1-26</u>	YES
	Claims <u>NONE</u>	NO

2. Citations and explanations:

Claims 1-6 lack novelty under PCT Article 33(2) as being anticipated by Elston (U.S. 6,383,369). Elston teaches a wastewater treatment system including a blackwater subsystem 100, a greywater subsystem 200 and a portable water subsystem (44+45+47+40). Numerous valves are included in the systems including 48, 49, 165, the valves of the toilets and shower, and the pumps also act as valves [as in claim 1]. Though shown in a dwelling, the system can be portable and part of a space or marine vessel (col. 4, lines 27-34) [as in claim 2]. Monitoring system 400 includes a controller (col. 13, lines 14-28 and col. 15, lines 20-25). [as in claim 3]. A reverse osmosis filter 352 and oxidation source including ozone 330 or air as an oxidation source is also taught [as in claims 4-6].

Claims 7-17 lack an inventive step under PCT Article 33(3) as being obvious over Elston in view of Teran et al. (U.S. 6,398,959). Both of subsystems 200 and 300 include disinfection/oxidation loops and level sensors (424,426 and others shown in figures 3B and 4) and dissolved oxygen sensors (e.g. 425, 427). Elston also teaches ozone disinfection (col. 11, line 21). He doesn't specifically teach an ozone generator nor an ORP sensor but both are well known in oxidation wastewater treating. For example, Teran teaches an oxidation system including an ozone generator and an ORP sensor (col. 16, lines 1-5 and col. 16, lines 25-30). It is considered that it would have been obvious to one ordinarily skilled in the art at the time of the invention to have the ozone generator and ORP sensor of Teran in the oxidation system of Elston since Teran teaches the benefits of killing 99.9% of viruses and performing water quality monitoring.

Claims 19-26 lack an inventive step under PCT Article 33(3) as being obvious over Elston in view of Lidgitt et al. (U.S. 5,006,232). Lidgitt teaches a macerator pump 7 is a marine vessel wastewater treatment system. It is considered that it would have been obvious to one ordinarily skilled in the art at the time of the invention to having the macerator pump 7 of Lidgitt for treating the incoming blackwater of Elston, since such would break down larger solids to enhance treatment thereof. Lidgitt also teaches an anoxic tanks 2 and 23, settling tank 201, and aerating tank with mixing aeration loop 14. It is considered that it would have been obvious to one ordinarily skilled in the art at the time of the invention to having the settlement tank and valving of Lidgitt incorporated into the system of Elston since Lidgitt teaches the benefit of improved wastewater treatment aboard ship.

Claim 18 lacks an inventive step under PCT Article 33(3) as being obvious over Elston in view of Lesh (U.S. 3,701,428). Elston teaches a black water subsystem including a temperature sensor 411, a level sensor 417, and a mixing/aeration loop (figure 2) but not a heater. However, Lesh teaches an infrared heater (col. 3, lines 13-14). It is considered that it would have been obvious to one ordinarily skilled in the art at the time of the invention to have the heater of Lesh in the invention of Elston since Lesh teaches the benefit of increasing the activity of the system.

Claims 1-26 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.