BLACK LIQUOR RECOVERY BOILER
ADVISORY COMMITTEE

MINUTES OF MEETING
Crowne Plaza Hotel/Atlanta Airport
Atlanta, Georgia
April 4, 5, & 6, 2005

OBJECTIVE

The objective of BLRBAC is to promote improved safety of chemical recovery boilers and their auxiliaries through the interchange of technical knowledge, experience, and data on past and any future recovery boiler incidents. ***Bylaws - 2.1***

OFFICERS

Chairman:	**Karl Morency** Georgia-Pacific P. O. Box 105605 Atlanta, GA 30348-5605	Tel: (404-652-4629 Fax: 404-584-1466 **ktmorence@gapac.com**
Vice-Chairman:	**Len Erickson** Boise Paper Solutions P. O. Box 50 Boise, ID 83728-0001	Tel: 208-384-4933 Fax: 208-384-7637 **lenerickson@boisepaper.com**
Secretary:	**Mike Polagye** FM Global P. O. Box 9102 Norwood, MA 02062	Tel: 781-255-4730 Fax: 781-762-9375 **michael-polagye @fmglobal.com**
Treasurer:	**Ron Hess** HSB Forest Products Group 110 Cedar Cove Court	Tel: 706-484-1723 Fax: 706-485-5267 **ronald_hess@hsb.com**

REGULAR MEMBERSHIP

Organizations operating, manufacturing, or insuring chemical recovery boilers are eligible.

ASSOCIATE MEMBERSHIP

Organizations having a direct interest or role in the safety of chemical recovery boilers are eligible.

CORRESPONDING MEMBERSHIP

A company residing outside of the United States which finds it impractical to attend meetings on a regular basis because of distance and expenses, but desires to be involved and informed of BLRBAC activities. ***Bylaws - 3.1***

BLRBAC INTERNET ADDRESS: ---- www.blrbac.org

IRS Employer ID/Tax ID (IRS E.I.N.T./T.I.N) ---- #13-366-5137

EXECUTIVE COMMITTEE

Karl Morency
BLRBAC Chairman
Georgia-Pacific
P. O. Box 105605
Atlanta, GA 30348-5605
Tel: 404-652-4629
Fax: 404-584-1466
ktmorence@gapac.com

Len Erickson
BLRBAC Vice-Chairman
Boise Paper Solutions
P. O. Box 50
Boise, ID 83728-0001
Tel: 208-384-4933
Fax: 208-384-7637
lenerickson@boisepaper.com

Mike Polagye
BLRBAC Secretary
FM Global
P. O. Box 9102
Norwood. MA 02062
Tel: 781-255-4730
Fax: 781-762-9375
michael-polagye@fmglobal.com

Ron Hess
BLRBAC Treasurer
HSB Forest Products Group
110 Cedar Cove Court
Buckhead, GA 30625
Tel: 706-484-1723
Fax: 706-485-5267
ronald_hess@hsb.com

Scott Moyer
BLRBAC Operator Representative
Representative
Rayonier Performance Fibers
P. O. Box 2070
4470 Savannah Highway
Jessup, GA 31598
Tel: 912-427-5140
Fax: 912-427-5008
morgan@akerkvaerner.com
scott.moyer@rayonier.com

Preston Morgan
BLRBAC Manufacturing

Kvaerner
3430 Toringdon Dr., Ste. 201
Charlotte, NC 28227
Tel: 704-414-3402
Fax: 704-541-3683
preston-

Jimmy Onstead
Insurance Representative
FM Global
Granite Park One
5800 Granite Parkway, Ste. 600
Plano, TX 75024
Tel: 972-731-1656
Fax: 972-731-1820
jimmy.onstead@fmglobal.com

****

Secretarial Services
Barbara Holich
1005 59th Street
Lisle, IL 60532
Tel: (312) 454-4890
Fax: (630) 512-0155
E-Mail: **fhholich@aol.com**

****

BLRBAC SUBCOMMITTEES

EMERGENCY SHUTDOWN PROCEDURES **John Andrews, Chairman** MeadWestvaco Corp. P. O. Box 118005 Charleston, SC 29423-8005 Tel: 843-745-3212 Fax: 843-745-3229 **Jda6@westvaco.com**	**FIRE PROTECTION IN DIRECT CONTACT EVAPORATORS** **Chris Jackson, Chairman** Global Risk Consultants Corp. c/o 12848 SW Thunderhead Way Beaverton, OR 97008 Tel/Fax: 503-671-9829 **chris-jackson @globalriskconsuiltants.com**
INSTRUMENTATION **David Avery, Chairman** Weyerhaeuser P.O. Box 678 Bennettsville, SC 29512 Tel: 843-479-0200, Ext. 458 or 335 Fax: 843-479-6603 **david.avery@weyerhaeuser.com**	**MATERIALS & WELDING** **Dan Phillips, Chairman** Industra Service Corp. 4122 NE 185th Avenue Portland, OR 97230 Tel: 503-624-9100 Fax: 503-624-9994 **dphillips@industrainc.com**
PERSONNEL SAFETY **Robert Zawistowski, Chairman** Power Specialists Associates, Inc. 531 Main Street Somers, CT 06071 Tel: 860-763-3241, Ext. 126 Fax: 860-763-3608 **bob.zawistowski@psaengineering.com**	**PUBLICITY & NEWS RELEASE** **Craig Cooke, Chairman** FM Global 815 Byron Drive Oconomowoc, WI 53066 Tel: 262-567-7370 Fax: 847-430-7699 **craig.cooke@fmglobal.com**
SAFE FIRING OF AUXILIARY FUEL **Dave Streit, Chairman** Buckeye Florida One Buckeye Drive Perry, FL 32348 Tel: 850-584-1402 Fax: 850-584-1717 **dave_streit@bkitech.com**	**SAFE FIRING OF BLACK LIQUOR** **Mark Sargent, Chairman (NEW)** International Paper 6285 Tri-Ridge Boulevard Loveland, OH 45140-7910 Tel: 513-248-6086 Fax: 513-248-6679 **mark.sargent@ipaper.com**
WASTE STREAM **John Rickard, Chairman** Jacobs-Sirrine P. O. Box 5456 Greenville, SC 29606 Tel: 864-676-6393 Fax: 864-676-6005 **john.rickard@jacobs.com**	

****

BLRBAC MEETING SCHEDULE

Fall	2005	--	October	3, 4 & 5
Spring	2006	--	April ????	3, 4 & 5
Fall	2006	--	October	2, 3 & 4
Spring	2007	--	April	

"Bring Operator(s). Give them a chance to hear first hand!"

■ Past Chairman Lon Schroeder

****

BLRBAC has created its own WEB Site which is:

www.blrbac.org

At this WEB site you will find a copy of the next Meeting Notice. Therefore, each Representative and Associate Representative is asked to inform their people of this new WEB site and after July 15, 2001, this is where they can obtain the following BLRBAC pages:

BLRBAC MEETING NOTICE

COVER LETTER General Information

REGISTRATION FORM Print and mail to Said & Done with appropriate fees

CROWNE PLAZA HOTEL Blocked room dates, pricing, address, hotel phone numbers, alternate hotel information, etc.

SCHEDULE List of Subcommittee activities on Monday & Tuesday

AGENDA Reports given to Joint BLRBAC Meeting on Wednesday

DELTA AIRLINE Reduced rates and contact phone number, including discounted Avis rates for BLRBAC attendees.

QUESTIONNAIRE Mail/e-mail completed questionnaires back to Said & Done. These will be given to the Operating Problems Subcommittee Chairman, Dean Clay. He will see that your concerns are brought up and discussed during the Operating Problems session at the next meeting.

Mrs. Barbara Holich
Said & Done
1005 59th Street
Lisle, IL 60532
fhholich@aol.com

BLRBAC Publications

The following is the current status of the BLRBAC publications and are available at the **BLRBAC INTERNET ADDRESS**:

www.blrbac.org

Recommended Practices by BLRBAC

Emergency Shutdown Procedure (ESP)
(October 2004)

Fire Protection in Direct Contact Evaporators and Associated Equipment
(October 2004)

Checklist and Classification Guide for Instruments and Control Systems
(October 2004)

Personnel Safety & Training
(April 2004)

Post ESP Guidelines
(October 2002)

Safe Firing of Auxiliary Fuel in Black Liquor Recovery Boilers
(October 2002)

Safe Firing of Black Liquor in Black Liquor Recovery Boilers
(April 2005)

Waste Stream Incineration
(April 2002)

Mike Polagye
BLRBAC Secretary
FM Global
P. O. Box 9102
Norwood, MA 02062

Phone: 781-255-4730
Fax: 781-762-9375
michael.polagye@fmglobal.com

EMERGENCY SHUTDOWN PROCEDURES SUBCOMMITTEE

John Andrews – Chairman*
MeadWestvaco Corporation
P.O. Box 118005
Charleston, SC 29423-3229
Tel: 843-745-3212; FAX: 843-745-8005
E-mail: jda6@meadwestvaco.com

Dean Clay* International Paper 6285 Tri-Ridge Blvd Loveland, OH 45140-7910 Tel: (513) 248-6564 Fax: (513) 248-6679 **dean.clay** **@ipaper.com**	Jack Clement* Clement Consulting, Inc. 563 Beaverbrook Drive Akron, OH 44333-2818 Tel: (330) 865-9779 Fax: (330) 865-6960 **clementcon** **@cs.com**	James Franks* GE GAP Services 855 Dogwood Road Somerville, TN 38068 Tel: (901) 465-0771 Fax: (888) 964-7348 **james.franks** **@ge.com**
Chris Gore* Weyerhaeuser P.O. Box 678 Bennettsville, SC 29512 Tel: (843) 479-0200 x430 Fax: (843) 479-9481 **chris.gore** **@weyerhaeuser.com**	John Kulig* Babcock & Wilcox P. O. Box 351 Barberton, OH 44203-0351 Tel: (330) 860-6438 Fax: (330) 860-9427 **Jakulig** **@babcock.com**	Mark LeBel* Alstom Power P. O. Box 500, 1112-2406 Windsor, CT 06095-0500 Tel: (860) 285-2238 Fax: (860) 285-5078 **mark.lebel** **@power.alstom.com**
Karl Morency* Georgia-Pacific P. O. Box 105605 Atlanta, GA 30348-5605 Tel: (404) 652-4629 Fax: (404) 654-4748 **ktmorenc** **@gapac.com**	Robert Norton* Norske Canada P. O. Box 60 (Crofton) Crofton, BC V0R 1R0 Canada Tel: (250) 246-6992 Fax: (250) 246-6370 **bob.norton** **@norskecanada.com**	Bo Oscarsson* Fluor Daniel Forest Products 100 Fluor Daniel Dr., 106-B Greenville, SC 29607-2762 Tel: (864) 281-5010 Fax: (864) 676-7479 **bo.oscarsson** **@fluor.com**
David Parrish* FM Global P. O. Box 9102 Norwood, MA 02062 Tel: (781) 255-4734 Fax: (781) 762-9375 **david.parrish** **@fmglobal.com**	John Phillips* Andritz Inc. 1115 Northmeadow Parkway Roswell, GA 30076 Tel: (770) 640-2434 Fax: (770) 640-2521 **john.phillips** **@andritz.com**	John Weikmann* Aker Kvaerner 3430 Toringdon Way, Suite 201 Charlotte, NC 28277 Tel: (704) 414-3431 Fax: (704) 541-7128 **john.weikmann** **@akerkvaerner.com**

* = Attended 04/06/05 Meeting

INSTRUMENTATION SUBCOMMITTEE

David Avery – Chairman
Weyerhaeuser Company
P. O. Box 678
Bennettsville, SC 29512
Tel: 843-479-0200, Ext. 458 or 335; Fax: 843-479-6603
david.avery@weyerhaeuser.com

Richard Pothier* – Sec. RiNan, Inc. 44 Glen Drive Peabody, MA 01960 Tel: 978-535-2520 Fax: 978-535-3502 **E-mail: rinan-44 @aol.com**	J. C. Browning, Jr.* Alabama River Pulp Co., Inc. P. O. Box 100 Perdue Hill, AL 36470 Tel: 334-743-8336 Fax: 334-743-8332 **E-mail: johnb @ariver.com**	William Camp International Paper Company 100 Jensen Road Prattville, AL 36067 Tel: 334-361-5620 Fax: 334-361-5619 **E-mail: bill.camp @ipaper.com**
John Cover* John E. Cover Engr., Inc. P. O. Box 35010 5425 Caldwell Mill Road Birmingham, AL 35236-6010 Tel: 205-991-7106 Fax: 205-991-6109 **E-mail: coverj @asme.org**	Michael Fay* Simpson Tacoma Kraft Co. P. O. Box 2133 Tacoma, WA 98421 Tel: 253-596-0250 Fax: 253-596-0160 **E-mail: mfay @simpson.com**	Alan Laflamme* Lincoln Paper & Tissue LLC 50 Katahdin Avenue Lincoln, ME 04457 Tel: 207-794=0685 Fax: 207-794-3964 **E-mail: alaflamme @lpandt.com**
Gail Lance* Babcock & Wilcox P. O. Box 351 Barberton, OH 44203 Tel: 330-860-2628 Fax: 330-860-2220 **E-mail: gjlance @babcock.com**	Rick Matarrese FM Global 655 Engineering Dr. #300 Norcross, GA 30092 Tel: 770-777-3684 Fax: 770-777-0414 **E-mail: rick.matarrese @fmglobal.com**	Bill McQuillan* SAPPI (S.D. Warren Company) 1329 Waterville Road Skowhegan, ME 04976 Tel: 207-238-3219 Fax: 207-238-3479 **E-mail: bill.mcquillan @na.sappi.com**
Dan Mott* Irving Pulp & Paper Ltd. P. O. Box 3007, Station B Saint John, NB, E2M 3H1 Canada Tel: 506-632-4149 Fax: 506-633-5598 **E-mail: mott.dan @irvingpulp.com**	Roger Smith* Georgia-Pacific Corp. P. O. Box 105605 Atlanta, GA 30303 Tel: 404-652-4264 Fax: 404-584-1466 **E-mail: resmith @gapac.com**	Jari Sopanen* Andritz Brasil Ltda. Rua Presidente Faria, 248-10ˆandra 80020-290 Cuitiba – PR Brazil Tel: +55 41 304-7682 Fax: +55 41 224-0014 **E-mail: jari-sopanen @andritz.com**

* = Attended 04/06/05 Meeting

MATERIALS & WELDING SUBCOMMITTEE

Dan Phillips – Chairman*

Industra Service Corporation
Portland, Oregon
Tel: 503-624-9100
Fax: 503-624-9994
E-mail: dphillips @industrainc.com

WESCO
Welding Engineering Services Co.
Tel: 503-612-9727
Fax: 503-612-9727
E-mail: phillipsdan @comcast.net

David K. Fuhrmann-Vice Chair* International Paper 6285 TriRidge Blvd. Loveland, OH 45140 Tel: 513-248-6954 Fax: 513-248-6679 **E-mail: dave.fuhrmann @ipaper.com**	Jesse Worsham* Weyerhaeuser Company Marlboro Mill P. O. Box 678 Batesville, SC 29512 Tel: 843-479-0200, Ext. 380 Fax: 843-479-6603 **E-mail: jesse.worsham @weyerhaeuser.com**	Fabian Henriques* MeadWestvaco 232 8th Street Chillicothe, OH 45601 Tel: n/a Fax: n/a **E-mail: fah1 @meadwestvaco.com**
Robert P. Sullivan* National Board 1055 Crupper Avenue Columbus, OH 43229 Tel: 614-888-8320 Fax: 624-847-1828 **E-mail: rsullivan @nationalboard.org**	Jim Young* CIMS Ltd. 5355 Parkwood Place Richmond, BC V6V 2N1 Canada Tel: 604-274-9065 Fax: 604-274-9095 **E-mail: jyoung @cimsltd.com**	Michael Garfield* Hartford Steam Boiler 191 Tannery Road Lowell, ME 04493 Tel: 207-732-5168 Fax: 207-732-5168 **E-mail: michael_garfield @hsb.com**
Mike Welch* Welding Services, Inc. 2225 Skyland Court Norcross, GA 30071 Tel: 678-728-9275 Fax: 770-209-0639 **E-mail: mwelch @wsi.aquilex.com**	Max D. Moskal* M&M Engineering 11020 W. 72nd Street Indiana Head Park, IL 60525 Tel: 708-784-3564 Fax: 708-784-3612 **E-mail: max_moskal @mmengineering.com**	Dennis Hollenbach* Alstom Power 2000 Day Hill Road Windsor, CT 06095 Tel: 860-285-9140 Fax: 860-285-5078 **E-mail: dennis.hollenbach @power.alstom.com**

* = Attended 04/06/05 Meeting

MATERIAL & WELDING SUBCOMMITTEE (Cont.)

Dave Lang* FM Global 400 Interpace Pkwy, Bldg. C Parsiphany, NJ 07054-1196 Tel: 973-541-6868 Fax: 973-402-1070 **E-mail: david.lang @fmglobal.com**	George Bodman* 13 Kingwood Villas Court Kingwood. TX 77339 Tel: n/a Fax: n/a **E-mail: blrclgdr @aol.com**	Steve Osborne* Babcock & Wilcox 20 S. VanBuren Avenue Barberton, OH 44203-0351 Tel: 330-860-1686 Fax: 330-860-9023 **E-mail: slosborne @babcock.com**
David Stasuk* Stasuk Testing & Inspection 7642 Winston Street Burnaby, BC V5A 2H4 Canada Tel: 604-420-4433 Fax: n/a **E-mail: dstasuk @nde.com**	Mary Russ* International Paper Eastover Mill 4001 McCords Ferry Road P. O. Box B Eastover, SC 29044 Tel: 803-353-7457 Fax: n/a **E-mail: mary.russ @ipaper.com**	Doug Vail* WSI 2225 Skyland Court Norcross, GA 30071 Tel: 678-728-9245 Fax: n/a **E-mail: dvail @wsi.aquilex.com**
Bud Auvil* WSI 2225 Skyland Court Norcross, GA 30071 Tel: 678-728-9261 Fax: n/a **E-mail: aauvill @wsi.aquilex.com**	Buddy Brown Alstom Power 1119 Riverfront Parkway Chattanooga, TN 37402 Tel: 423-752-2200 Fax: 423-752-2660 **E-mail: richard.a.brown @power.alstom.com**	Mark Elrod Applied Technical Services 1280 Field Parkway Marietta, GA 30066 Tel: 678-841-1049, Ext. 2276 Fax: n/a **E-mail: melrod @atslab**
Mike Barry 2000 Dayhill Road Windsor, CT 06095 Tel: 860-285-3920 Fax: 860-285-5078 **E-mail: mike.barry @power.alstom.com**	James Duncan FM Global 70 Manchester Dr., Ste. 112 Staunton, VA 24401 Tel: 540-886-2743 Fax: 540-886-2743 **E-mail: james.duncan @fmglobal.com**	Billy Walker C.N.A. **E-mail: billywalker @cna.com**

* = Attended 04/06/05 Meeting

MATERIAL & WELDING SUBCOMMITTEE (Cont.)

Ed Rambo Sage of America **E-mail: ed @sageofamerica.com**	Richard J. Godin SAPPI (S.D. Warren Company) P. O. Box 1600 Skowhegan, ME 04976-9512 Tel: 207-238-7685 Fax: 207-238-7530 **E-mail: n/a**	Jim Martin Andritz 10745 Westside Parkway Alpharetta, GA 30004 Tel: 770-640-2489 Fax: 770-640-2603 **E-mail: james.martin @andritz.com**
Lasse Koivisto Andritz Relanderinkatu 2 78200 Varkaus, Finland Tel: 358-17-578-211 Fax: n/a **E-mail: lasse.koivisto @andritz.com**	Tom Lezzer Appleton **E-mail: tlezzer @appletonideas.com**	Bob Patrick MeadWestvaco P. O. Box 757 Escanaba, MI 49825 Tel: 906-786-1660 Fax: 906-786-3558 **E-mail: rap @meadwestvaco-com**
Stephen L. Meiley M&M Engineering 300A Lake Street Ramsey, NJ 07446 Tel: 201-785-9229 Fax: 201-785-9555 **E-mail: steve_meiley @mmengineering.com**	Ron McCarty P. O. Box 1559 Sandia Park, NM 87047-1559 Tel: 505-286-7888 Fax: 505-286-7887 **E-mail: bobronmac @worldnt.att.net**	W. Kirk Thomas Packaging Corp. of America P. O. Box 1048 Valdosta, GA 31603-1048 Tel: 912-599-2301 Fax: 912-559-2338 **E-mail: n/a**
John Vanden Hock GE GAP Services 87 Charters Road Brampton, Ontario L6V 2S8 Canada Tel: n/a; Fax: n/a **E-mail: john.vandenhock @gegapservices.com**		

* = Attended 04/06/05 Meeting

PUBLICITY & NEWS RELEASE SUBCOMMITTEE

Craig Cooke – Chairman*
FM Global
815 Byron Drive
Oconomowoc, WI 53066
Tel: 262-567-7370; Fax: 262-567-7370
E-mail: craig.cooke@fmglobal.com

* = Attended 04/06/05 Meeting

PERSONNEL SAFETY SUBCOMMITTEE

Robert E. Zawistowski – Chairman
Power Specialists Associates, Inc.
531 Main Street
Somers, CT 06071
Tel: 860-3241, Ext. 126; Fax: 860-763-3608
E-mail: bob.zawistowski@psaengineering.com

Fred Abel AXA Corporate Solutions Assurance Rhone-Alpes 69006 Lyons France Tel: +33 4 72 83 29 41 Fax: +33 4 72 83 29 40 **E-mail: frederic.abel @axa-corporatesolutions.com**	Ken Baker Smurfit-Stone Container Corp. P. O. Box 100544 Florence, SC 29501-0544 Tel: 843-269-0179 Fax: 843-269-0167 **E-mail: kbaker @smurfit.com**	James Franks GE GAP Services 855 Dogwood Road Somerville, TN 36068 Tel: 901-465-0771 Fax: 888-964-7348 **E-mail: james.franks @gegapservices.com**
Jim Dickinson Babcock & Wilcox Company 20 S. Van Buren Avenue Barberton, OH 44203-0351 Tel: 330-860-1229 Fax: 330-860-9319 **E-mail: jadickinson @babcock.com**	Thomas (Rick) Durham Georgia Pacific Corporation 133 Peachtree St. NE (30303) P. O. Box 105605 Atlanta, GA 30348-5605 Tel: 404-652-5990 Fax: 404-584-1466 **E-mail: TRDurham @gapac.com**	David Fuhrmann International Paper Company 6285 Tri-Ridge Road Loveland, OH 45140-7910 Tel: 513-248-6954 Fax: 513-248-6679 **E-mail: dave.fuhrmann @ipaper.com**
David Gadai Alstom Power, Inc. 2000 Day Hill Road Windsor, CT 06095-0500 Tel: 860-285-4297 Fax: 860-285-5078 **E-mail: dave.gadai @power.alstom.com**	Marko Kvist Andritz Services, Inc. 10745 Westside Parkway Alpharetta, GA 30004 Tel: 770-640-2516 Fax: 770-640-2455 **E-mail: marko.kvist @andritz.com**	Larry Lindsey MeadWestvaco P. O. Box 940 Phenix City, AL 36868-0940 Tel: 334-855-5024 Fax: 334-855-5172 **E-mail: GLL1 @meadwestvaco.com**

No attendance to report – Subcommittee did not meet

PERSONNEL SAFETY SUBCOMMITTEE (Cont.)

Jamison Manion
Mead Westvaco
35 Hartford Street
Rumford, ME 04276
Tel: 207-369-2479
Fax: 207-369-2813
JJM11@MeadWestvaco.com

Mr. Ronald Hess
HSB Forest Products Group
110 Cedar Cove Court
Buckhead, GA 30625
Tel: 706-484-1723
Fax: 706-485-5267
Ronald_Hess@hsb.com

Lynn Rawls
GE Global Asset Protection Services
200 College Avenue
Charlotte, NC
Tel: 601-928-9420
Fax: 601-928-9420
lynn.rawls@gegapservices.com

Len Olavessen
Buckman Laboratories International, Inc.
1256 North McLean Blvd.
Memphis, TN 38108-1241
Tel: 800-282-5626
Fax: 901-272-6451
lrolavessen@buckman.com

Daryl Hoffman
FM Global
601 108th Avenue SE
Suite 1400
Bellevue, WA 98004
Tel: 425-637-2363
Fax:
Daryl.hoffman@fmglobal.com

Preston Morgan
Kvaerner Power, Inc.
3430 Toringdon Drive
Suite 201
Charlotte, NC 28277
Tel: 704-414-3402
Fax: 704-541-3683
preston.morgan@akerkvaerner.com

Rick Spangler
Rick Spangler, Inc.
310 John Shaw Road
St. Simons Island, GA 31522
Tel: 912-638-1324
Fax: 912-634-9697
spangler@thebest.net

George Barr
Weyerhaeuser Kamloops
Mail Stop 101
P.O. Box 800
Kamloops, BC
Canada
Tel: 250-851-7860
Fax: 250-828-7745
george.barr@weyerhaeuser.com

Robert P. Sullivan
The National Board
1055 Crupper Avenue
Columbus, OH 43229-1183
Tel: 614-888-8320
Fax: 614-847-1828
rsulliva@nationalboard.org

No attendance to report – Subcommittee did not meet

SAFE FIRING OF AUXILIARY FUEL SUBCOMMITTEE

Dave Streit – Chairman*
Buckeye Florida
One Buckeye Drive
Perry, FL 32348
Tel: 850-584-1402; Fax: 850-584-1717
dave_streit@bkitech.com

Allen L. Ray – Sec.* Process Equipment Barron Industries, Inc. 2770 Welborn Street P. O. Box 1607 Birmingham, AL 35210 Tel: 205-624-1908 Fax: 205-662-6037 **E-mail: aray @processbarron.com**	John Alesandrini Babcock & Wilcox Co. P. O. Box 351 Barberton, OH 44203-0315 Tel: 330-860-6001 Fax: 330-860-2220 **E-mail: jmalesandrini @babcock.com**	Scott Crysel* FM Global 5800 Granite Pkwy., Ste. 600 Plano, TX 75024 Tel: 972-731-1658 Fax: 972-731-1820 **E-mail: scott.crysel @fmglobal.com**
Robert DeCarrera Georgia-Pacific Corp. 133 Peachtree Street N.E. Atlanta, GA 30303 Tel: 404-652-4686 Fax: 404-654-4746 **E-mail: rdecarre @gapac.com**	Lino DiLeonardo Zurich 400 University Ave., 16th Floor Toronto, ON M5G 1S7 Tel: 519-824-4548 Fax: 519-824-0916 **E-mail: lino.di.leonardo @zurich.com**	Bruce Knowlen* Weyerhaeuser Company WTC1B22 P. O. Box 9777 Federal Way, WA 98063 Tel: 253-924-6434 Fax: 253-924-4380 **E-mail: bruce.knowlen @weyerhaeuser.com**
Jim Quandt (Alt.) Weyerhaeuser Company P. O. Box 275 Springfield, OR 97477 Tel: 541-741-5428 Fax: 541-741-5895 **E-mail: jim.quandt @weyerhaeuser.com**	Ivan Semyanko, PE ABB Alstom Power, Inc. CEP Code 1017-2406 200 Day Hill Road Windsor, CT 06095 Tel: 860-285-3953 Fax: 860-285-4020 **E-mail: ivan.semyanko @us.abb.com**	

* = Attended 04/06/05 Meeting

SAFE FIRING OF BLACK LIQUOR SUBCOMMITTEE

Mark Sargent – Chairman* (NEW)
International Paper
6285 Tri-Ridge Blvd.
Loveland, OH 45140-7910
Tel: 513-248-6086; Fax: 513-148-6679
E-mail: mark.sergeant@ipaper.com

Clif Barreca* Weyerhaeuser P. O. Box 1391 New Bern, NC 28563 Tel: 252-633-7696 Fax: 252-633-7657 **E-mail: clif.barreca @weyerhaeuser.com**	Len Erickson* Boise Paper Solutions P. O. Box 50 Boise, ID 83728-0001 Tel: 208-384-4933 Fax: 208-384-7637 **E-mail: lenerickson @boisepaper.com**	Larry Hiner* Babcock & Wilcox P. O. Box 351 Barberton, OH 44203-0351 Tel: 330-860-6525 Fax: 330-860-9295 **E-mail: lahiner @babcock.com**
Majed Ja'arah Temple Inland, Inc. 1750 Inland Road Orange, TX 77632 Tel: 409-746-7315 Fax: 409-746-7249 **E-mail: majedjaarah @templeinland.com**	Brian Lemay* FM Global 165 Commerce Valley Dr. West Suite 500 Thornhill, ON L3T 7V8 Tel: 905-763-5683 Fax: 905-763-5622 **E-mail: brian.lemay @fmglobal.com**	Brad Merritt* GE GAP Service 200 South College St. Suite 1630 Charolette, NC 28202 Tel: 704-353-6468 Fax: 704-376-2928 **E-mail: bradley.merritt @ge.com**
Scott Moyer Rayonier Performance Fibers P. O. Box 2070 4470 Savannah Highway Jessup, GA 31598 Tel: 912-427-5140 Fax: 912-427-5008 **E-mail: scott.moyer @rayonier.com**	Doug Murch* MeadWestvaco 3475 Newmark Drive Miamisburg, OH 45342 Tel: 937-495-9237 Fax: n/a **E-mail: douglas.murch @meadwestvaco.com**	Arie Verloop* Jansen Comb. & Blr. Tech. 12025 115th Ave., NE Suite 250 Kirkland, WA 98034-6943 Tel: 425-825-0500 Fax: 425-825-1131 E-mail: arie.verloop @jansenboiler.com
Rick Young* Alstom Power 1119 Riverfront Parkway Chattanooga, TN 37402 Tel: 423-752-2603 Fax: 423-752-2660 **E-mail: frederick.young @power.alstom.com**		

* = Attended 04/06/05 Meeting

FIRE PROTECTION IN DIRECT CONTACT EVAPORATORS AND ASSOCIATED EQUIPMENT SUBCOMMITTEE

Chris Jackson – Chairman*
Global Risk Consultants Corp.
c/o 12848 SW Thunderhead Way
Beaverton, OR 97008
Tel/Fax: 503-671-9829
E-mail: chris.jackson@globalriskconsultants.com

Randy Baker Buckeye Technologies One Buckeye Drive Perry, FL 32348 Tel: 850-584-13808 Fax: 850-584-1738 **E-mail: randy_baker @bkitech.com**	Craig Cooke-Vice chairman* FM Global 815 Byron Drive Oconomowoc WI 53066 Tel: 262-567-7370 Fax: 847-430-7411 **E-mail: craig.cooke @fmglobal.com**	Joe Goss* Delta Natural Kraft 1701 Jefferson Parkway Pine Bluff, AR 71612 Tel: 870-541-5052 Fax: 870-541-5089 **E-mail: n/a**
Don Lacey* Eurocan P. O. Box 1400, Eurocan Way Kitimat, BC V8C 2H1 Canada Tel: 250-639-3440 Mobile: 250-639-4239 Fax: 250-639-3584 **E-mail: dlace @epp.westfrasertimber.ca**	John Lisenby* International Paper P. O. Box 580 Roanoke Rapids, NC 27870 Tel: n/a Fax: n/a **E-mail: john.lisenby @ipaper.com**	Joseph Lynch – Secretary* GE GAP Services 1105 Sanctuary Parkway Suite 200 Alpharetta, GA 30004-4741 Tel: 770-569-7091 Fax: 888-964-7348 **E-mail: joe.lynch @ge.com**
Nick Merriman SAPPI Forest Products Tugela, Republic of South Africa Tel: +27 (0) 32 456 1433 Fax: n/a **E-mail: nick.merriman @sappi.com**	Steve Osborne Babcock & Wilcox 20 S. Van Buren Avenue Barberton, OH 44203 Tel: 330-860-1686 Fax: 330-860-9023 **E-mail: slosborne @babcock.com**	

* = Attended 04/06/05 Meeting

WASTE STREAMS SUBCOMMITTEE

John Rickard* - Chairman
Jacobs Engineering
P. O. Box 5456
Greenville, SC 29606
Tel: 864-676-6393; Fax: 864-676-6005
E-mail: john.rickard@jacobs.com

Craig J. Aderman* SAPPI (S. D. Warren) P. O. Box 1600 Skowhegan, ME 04976-9512 Tel: 207-238-3177 Fax: 207-856-3675 **E-mail: craig-aderman @sappi-na.com**	Henry Beder* Weyerhaeuser WTC 2G25 P. O. Box 9777 Federal Way, WA 98003 Tel: 253-924-4242 Fax: 253-924-5920 **E-mail: hank.beder @weyerhaeuser.com**	Mark E. Cooper* FM Global Key Center 601 108th Avenue, NE Ste.1400 Bellview, WA 98004 Tel: 425-709-5084 Fax: 425-454-7847 **E-mail: mark.cooper @fmglobal.com**
E. Scott Crysel* FM Global Granite Park One Plano, TX 75024 Tel: 972-731-1658 Fax: 972-731-1820 **E-mail: scott.crysel @fmglobal.com**	Ned Dye* Jansen Combustion and Boiler Technologies 12025 115th Ave., NE Ste. 250 Kirkland, WA 98034-6935 Tel: 425-825-0500, Ext. 125 Fax: 425-825-1131 **E-mail: ned.dye @jansenboiler.com**	Jerry Garner BE&K Engineering P. O. Box 12607 Birmingham, AL 35202-2607 Tel: 205-972-6432 Fax: 205-972-6300 **E-mail: garnerj @bek.com**
Arnie Iwanick* Harris Group, Inc. 1750 NW Naito Parkway Portland, OR 97209-2530 Tel: 503-345-4516 Fax: 503-228=0422 **E-mail: arnie.iwanick @harrisgroup.com**	Olie Kujanpaa* Andritz 10745 Westside Parkway Alpharetta, GA 30004 Tel: 770-640-2571 Fax: 770-640-2455 **E-mail: olli.kujanpaa @andritz.com**	

* = Attended 04/06/05 Meeting

Registered for the meeting were:

A.H. Lungberg Associates, Inc.
Seefeld, Paul, Jacksonville, FL

AF-IPK
Flodqvist, Bert, Stockholm, Sweden

Alabama Pine Pulp
Browning, John, Perdue Hill, AL
Hurst, James, Perdue Hill, AL
Thames, Anthony, Perdue Hill, AL
Thomas, Anthony, Perdue Hill, AL
Thompson, Allen, Perdue Hill, AL
Williams, John, Perdue Hill, AL

Alabama River Pulp
Corbett, Richard, Perdue Hill, AL
Drew, Sandi, Perdue Hill, AL
Jordan, Chuck, Perdue Hill, AL
Needham, Chris, Perdue Hill, AL
Norris, Mitchell,

Alstom Power
Gabrielli, Frank, Windsor, CT
Gibowski, Steve, Pensacola, FL
Grasso, Bob, Vancouver, WA
Hollenbach, Dennis, Windsor, CT
Kistka, Gerry, Jacksonville, FL
LeBel, Mark, Windsor, CT
Tallis, Allan, Chattanooga, TN
Young, Frederick, Chattanooga, TN

American Forest & Paper Assoc.
Grant, Thomas, Yonkers, NY

Andritz, Inc.
Collins, Peter, Alpharetta, GA
Frykmo, Christer, Roswell, GA
Kujanpaa, Olli, Alpharetta, GA
Lindh, Timo, Roswell, GA
Phillips, John, Alpharetta, GA
Sopanen, Jari, Roswell, GA

Appleton Papers
Lezzer, Tom, Roaring Spring, PA

AXA Corporate Solutions
Abel, Frederic, Lyon, France

Axcon Corporation
David, Mark, Milton, FL
Pedicord, Brian, Milton, FL

Babcock & Wilcox
Blazer, Phil, Charlotte, NC
Burkhardt, John, Atlanta, GA
Dickinson, Jim, Barberton, OH
Grant, Tommy, Greenvale, SC
Hiner, Larry, Barberton, OH
Kittel, David, St. Marys, CA
Kulig, John, Barberton, OH
Lance, Gail, Barberton, OH
Osborne, Steve, Barberton, OH
Rose, Aaron, Atlanta, GA
Sherlock, H. Bentley, Atlanta, GA
Shumate, Victor, Atabaster, AL
Wade Blaser, n/a
Yash, John, Atlanta, GA

Babcock Power Sales
Snuggs, Jim, Kennesaw, GA

BE&K Construction Co.
Beebe, Don, Birmingham, AL

Boise Cascade
Erickson, Leonard, Boise, ID
Hill, Wes, St. Helen's, OR
Jukkala, Jay, International Falls, MN
Kinnaman, Steve, Boise, ID
Nease, Scotty, DeRidder, LA
Przybylski, Tom, International Falls, MN

Bowater
Edwards, Sean, Sylacauga, AL
Nixon, John, Catawba, SC
Shaver, Craig, Catawba, SC

Bowater Newsprint
Cambron, Tim, Coosa Pines, AL
Dover, Jeff, Coosa Pines, AL

Buckeye Technologies
Streit, David, Perry, FL

Buckman Laboratories
Graham, Jim, Memphis, TN
Olavessen, Len, Memphis, TN

CNA Risk Control
Walker, Billy, Apex, NC

Capstone Technology
Nordness, David, Hampton Cove, AL

ChemTreat
Kanney, Mike, Glen Allen, VA

Registered for the meeting were:

Cianbro Corporation
Bragdon, Dana, Pittsfield, ME
Hayes, Terry, Pittsfield, ME

CIMS Ltd
Young, Jim, Richmond, BC, Canada

Clement Consulting
Clement, Jack, Akron, OH

CORR System, Inc.
Ruiz de Molina, Eladio, Birmingham, AL

Diamond Power
Kaminski, Bob, Lancaster, OH
Tavares, Alarick, Lancaster, OH
Youssef, Simon, Lancaster, OH

Domtar
Buster, Mark, Ashdown, AR
Crouch, Kelley, Ashdown, AR
Jester, Norman, Ashdown, AR
Haupt, Travis, Port Edwards, WI

DTE Engineering Services
McPherson, Bill, Ann Arbor, MI

Dynamic Energy Systems
McClain, Cliff, St. Albert, MO

Ecolochem. Inc.
McGraw, Robert, Norfolk, VA

Electron Machine Corp., The
Vossberg, Carl III, Umatilla, FL
Vossberg, Carl IV, Umatilla, FL

Emerson Process
Rennie, Chip, Honey Brook, PA

Environmental Elements
Bringman, Lewis, Baltimore, MD
Shanahan, Dennis, Pensacola, FL

Fluor Daniel Forest Products
Lewis, John, Greenville, SC
Oscarsson, Bo, Greenville, SC

FM Global
Cooke, Craig, Oconomowoc, WI
Cooper, Mark, Bellevue, WA
Crysel, Scott, Plano, TX
Hoffman, Daryl, Bellevue, WA
Labonte, Guy, Montreal, QU
Lamb, Ron, Parsippany, NJ
Lang, David, Bedminster, NJ

FM Global (Cont.)
Lemay, Brian, Thornhill, ON.
Morgan, Rick, Plano, TX
Onstead, Jimmy, Plano, TX
Parrish, David, Norwood, MA
Polagye, Mike, Norwood, MA

GE GAP Services
Franks, James, Somerville, TN

General Reinsurance Corp.
Freeman, Stuart, Atlanta, GA

George H. Bodman, Inc.
Bayse, Michael, Kingwood, TX
Bodman, George, Kingwood, TX

Georgia-Pacific
Burney, S. L., Atlanta, GA
Collins, Greg, Camas, WA
Davis-Hawkins, Thomas, Toledo, OR
Durham, Rick, Atlanta, GA
Morency, Karl, Atlanta, GA
Smith, Roger, Atlanta, GA

Glatfelter Co.
Barnhard, Todd, Spring Grove, PA
Gentzler, Bill, Spring Grove, PA

Global Risk Consultants
Cain, Morgan, Friendsville, TN
Jackson, Christopher, Beaverton, OR

Graphic Packaging International
Hazard, Joel, Macon, GA
Moore, Kevin, Macon, GA

Gulf States Paper
Duckworth, Marty, Demepolis, AL

Harris Group
Iwanick, Arnie, Portland, OR

Hartford Steam Boiler
Garfield, Michael, Lowell, ME
Hess, Ron, Buckhead, GA

Hartley Energy Management
Hartley, Chuck, Duluth, MN

Hercules
Bowen, Glenn, Glenwood, NY

Registered for the meeting were:

Industra
Phillips, Dan, Portland, OR

Inst. of Paper Science & Tech.
Verrill, Chris, Atlanta, GA

International Paper
Clay, Dean, Loveland, OH
Fuhrmann, Dave, Loveland, OH
Glasheen, Mike, Kaukauna, WI
Kiper, Mike, Loveland, ON
Kortes, Matthew, Savannah, GA
Koth, Ken, Eastover, SC
Morgan, Keith, Kaukauna, WI
Odom, Dennis, Roanoke Rapids, NC
Pope, Richard, Eastover, SC
Russ, Mary, Columbia, SC
Sargent, Mark, Loveland, OH
Slagel, David, Savannah, GA
Stringfellow, David, Loveland, OH

Interstate Paper Corp.
Crosby, Phillip, Riceboro, GA
Hardy, Michael, Riceboro, GA
Sneed, Manual, Riceboro, GA

Irving Pulp & Paper
Mott, Dan,, Saint John, NB

Jacobs Engineers, Inc.
Rickard, John, Greenville, SC

Jansen Technologies
Dye, Ned, Kirkland, WA
Verloop, Arie, Kirkland, WA

John E. Cover Engineering, Inc.
Cover, John, Birmingham, AL

JV Industrial Companies
Cartrette, Johnny, Tulsa, OK
Pyszynski, George, Tulsa, OK

Kimberly-Clark
Kaufmann, Brian, Roswell, GA

Kvaerner Pulping
Abrams, Larry, Childersburg, AL
Blackard, Vernon, Charlotte, NC
Christiansen, Gene, Charlotte, NC
Conley, Clark, Charlotte, NC
Geedey, Jim, Charlotte, NC
King, Dave, Charlotte, NC

Kvaerner Pulping (Cont.)
Morgan, Preston, Charlotte, NC
Morris, Richard, Charlotte, NC
Sherrod, Hank, Charlotte, NC
Wasson, Eric, Charlotte, NC
Weikmann, John, Charlotte, NC

Lincoln Paper & Tissue
LaFlamme, Alan, Lincoln, ME
MacEachern, Pat, Lincoln, ME

Liquid Solids Control
Sweeney, Michael, Upton, MA

Longview Fibre
Berg, G. L., Longview, WA

M&M Engineering
Moskal, Tom, Indian Head Park, IL

MeadWestvaco
Andrews, John, Charleston, SC
Beauchamp, Kevin, Escanaba, MI
Klitzke, Rudimar, Covington, VA
Long, Rick, Charleston, SC
McAllister, Phil, Chillicothe, OH
Murch, Douglas, Miamisburg, OH

Mid-America Packaging
Taylor, Lynn, Pine Bluff, AR

Mondi Business Paper
Carter, Michael, Richardsbay, So. Africa

Mondi Packaging Paper Service
Ryszard, Maciejak, Swiecie, Poland

Nalco
Totura, George, Naperville, IL

National Board of BPVI
Sullivan, Robert, Columbus, OH

Neenah Paper
Fry, Robert, New Glasgow, NS

Norske Skog
Norton, Bob, Campbell River, BC

Packaging Corp. of America
Farris, Mike, Counce, TN
Stelling, John, Tomahawk, WI
Sykes, Ed, Tomahawk, WI
Walker, Clint, Counce, TN

Registered for the meeting were:

Phoenix Pulp and Paper
Kulrat, Pichet, Khonkaen, Thailand
Normkusol, Thongchai, Khonkaen, Thailand

Potlatch
Bliss, John/David, McGehee, AR
Morales, Sara, McGehee, AR
Wren, David, Lewiston, ID

Process Equipment
Nolen, Ken, Pelham, AL
Ray, Allen, Pelham, AL

Propal Pulp & Paper
Castillo, Moises, Cali, Colombia

PROSWECO
Thorslund, Gunnar, Stockholm, Sweden

PT. Riau Prima Energi
Rajan, Punnath Thaithodi, Riau, Indonesia

Rayonier
Daniels, Richard, Jesup, GA
Moyer, Scott, Jesup, GA
Yeomans, Scott, Jesup, GA

Recirculation Technologies
Finley, Bob, Shreveport, LA
Gaus, Jeff, Shreveport, LA

RiNan, Inc.
Pothier, Richard, Peabody, MA

RMR Mechanical
Roy, Bob, Cumming, GA

SAPPI Forest Products
Aderman, Craig, Westbrook, ME
Dorko, Bob, Skowhegan, ME
McQuillan, Bill, Skowhegan, ME
Merriman, Nick, Johannesburg, So. Africa

Siam Cellulose
Mekmok, Nattavut, Karuchanaburi, Thailand

Siam Pulp & Paper Company
Yamtree, Karn, Ratchaburi, Thailand

Simpson Tacoma Kraft Co.
Fay, Michael, Tacoma, WA

Smurfit Carton de Colombia
Cubillos, Jairo, Cali, Colombia
Franco, Daniel, Cali, Colombia

Smurfit-Stone Container
Alexander, Christopher, Stevenson, AL
Craig, David, Hodge, LA
James, Kenneth, Brewton, AL
Mills, Drexel, Missoula, MT
Pate, Jerry, Brewton, AL
Phelps, Bob, Hopewell, VA
Wynn, Doug, Stevenson, AL

Stasuk Testing & Inspection Ltd.
Stasuk, David, Burnaby, BC

Stora Enso North America
Rasmussen, Rodney, Wisconsin Rapids, WI
Zimmerman, Jeremy, Wisconsin Rapids, WI

Suzano Papel e Celulose S.A.
Alexandre de Morais, Jose, Suzano, SP, Brazil
Pessotta, Marcos, Suzano, Sao Paulo, Brazil
Santos, Nerivaldo, Suzano, Sao Paulo, Brazil

Tembec
Moore, Robert, St. Francisville, LA
Yielding, Tim, St. Francisville, LA

Temple-Inland
Barrack, Ben, Bogalusa, LA
Crain, Roger, Bogalusa, LA
Ingram, Paul, Bogalusa, LA
Scoggins, Jim, Sugarland, TX

Wausau Paper
Fochs, Jeff, Mosinee, WI

Weyerhaeuser
Avery, David, Bennettsville, SC
Barreca, Clif, New Bern, NC
Beder, Henry, Federal Way, WA
Bishop, Larry, n/a
Bogart, Steve, Longview, WA
Cahoon, Kari, n/a
Crouse, Ray, Bennettsville, SC
Detwiler, Tom, Johnsonburg
Dixon, Jim, Pine Hill, AL
Franco, Don, Johnsonburg
Gore, Chris, Bennettsville, SC
Jones, Terrence, n/a
Knowlen, Bruce, Federal Way, WA
Porter, Leroy, Oglethorpe, GA
Retzinger, Roger, Johnsonburg
Roberts, Steve, Columbus, MS
Snell, Timothy, n/a
Worsham, Jesse, Bennettsville, SC

WSI
Auvil, Alton, Norcross, GA
Vail, Doug, Norcross, GA

INTRODUCTION

BLRBAC's Chairman, Karl Morency, called the meeting to order at 8:00 a.m. on Wednesday, April 6, 2005.

CHAIRMAN: I would like to welcome all of you to the BLRBAC Main Committee meeting.

We will follow the published agenda for this meeting. We want to thank each of you for your continued support and attendance.

OLD BUSINESS

ACCEPTANCE OF MINUTES OF FALL OF 2004 – Karl Morency
I would like to have a motion from the membership to accept the minutes as posted on the BLRBAC WEB site for Fall 2004. I see a hand. Could I have a second? Thank you. Any discussion? Hearing none, those in favor raise your hand. Okay**.** Opposed? Thank you. The October 2004 Minutes are accepted as written.

NEW BUSINESS

1. NEW MEMBERS/REPRESENTTIVE CHANGES REPORT

NEW REGULAR MEMBERSHIP

NEENAH PAPER – accepted as Member (recovery boiler operating company in Canada that was spun off from Kimberly Clark in 2004)

Robert Fry was designated as Representative
Rick Sitko was designated as Alternate Representative

NEW ASSOCIATE MEMBERSHIPS

CHARLES HIGGINBOTHAM, PE, LLC – accepted as Associate Member (recovery boiler consultant)

Charles Higginbotham was designated as Associate Representative
Alternate Associate Representative - none

DTE ENERGY – accepted as Associate Member (corrosion monitoring & process measurements in recovery boilers)

William McPherson was designated as Associate Representative
Charles Holt was designated as Alternate Associate Representative

HARTLEY ENERGY MANATEMENT, INC. (HEMI) – accepted as Associate Member (water treatment services)

Charles E. Hartley designated as Associate Representative
Alternate Associate Representative – none

INDIGO TECHNOLOGIES, LLC – accepted as Associate Member (emission control technology)

Dennis Shanahan was designated as Associate Representative
Robert Crynack was designated as Alternate Associate Representative

NEW CORRESPONDING MEMBERSHIPS

PHOENIX PULP AND PAPER COMPANY, LTD. – accepted as Corresponding Member (Non-North American operating company)

SIAM CEMENT COMPANY – d/b/a Siam Pulp and Paper Public Company Ltd. – (Non-North American operating company) and d/b/a Siam Cellulose Company (Non-North American operating company)

REGULAR REPRESENTATIVE CHANGES

GLOBAL RISK CONSULTANTS
Christopher Jackson replaces Charlie Macaulay as Representative

LUMBERMEN'S UNDERWRITING ALLIANCE
Will Nance replaces Keith Brewer as Representative

RAYONIER
Scott Moyer replaces Wayman Thompson as Representative
Ken Ellis replaces R. A. Nance as Alternate Representative

WEYERHAEYSER
Chris Gore replaces Larry Carter as Representative
Clif Barreca replaces Chris Gore as Alternate Representative

ASSOCIATE REPRESENTATIVE CHANGES

BE&K CONSTRUCTION COMPANY
Don Beebe replaces Jerry Garner as Associate Representative
Barry Seidel replaces Billy Davis as Alternate Associate Representative

THE NATIONAL BOARD
George Bynog replaces Robert Sullivan as Associate Representative

RECIRCULATION TECHNOLOGIES, INC. (RTI)

Robert Finley has now been designated as Associate Representative
Jeff Gaus has now been designated as Alternate Associate Representative

CORRESPONDING MEMBERSHIP CHANGES - None

MEMBERSHIP COMPANY NAME CHANGES - None

2. **EXECUTIVE COMMITTEE REPORT –** Karl Morency

The Executive Committee met in a closed session on Tuesday afternoon. All seven members were in attendance. The following items were discussed during the meeting.

- We received several comments that nearly all of the subcommittee meetings were in closed session on Monday so there was nothing for non-subcommittee members to do. After discussing this with all of the subcommittee chairman, the decision was made that starting with the Fall 2005 meeting, all subcommittee meetings will be open with the exception of the ESP subcommittee. It is hoped that this will result in increased subcommittee participation and membership. Anyone is welcome to join a subcommittee. You can do so by simply contacting the subcommittee chairman and advising him that you would like to join the committee. The contact information for the subcommittee chairmen can be found on the BLRBAC Web page.
- There are several times during the next few years when the normal BLRBAC meeting dates would conflict with a religious holiday. In order to avoid these conflicts, the Fall 2006 meeting will be held the second week of October. The Spring 2007 meeting will be moved to the last week of March.
- Last year we conducted a member survey to get feedback on what could be done to improve how we operate BLRBAC. We are forming a committee headed by Len Erickson to review the results of the survey and develop a list of recommendations for consideration by the membership. Anyone wishing to participate in this effort should contact Len.
- The BLRBAC guidelines recommend that recovery boiler ESP systems be dedicated, stand-alone systems. The question has been raised numerous times as to what this really means and the question keeps getting passed back and forth among the ESP, the Instrumentation, and the Safe Firing of Black Liquor subcommittees. Mike Polagye has agreed to head a task group that will develop a BLRBAC definition of what constitutes a “dedicated, stand-alone system”. The committee membership will include the chairmen of these three subcommittees and anyone else who would like to participate. If you have an interest, please contact Mike.
- The Executive Committee frequently receives requests for copies of the recovery boiler contract list and the ESP critical incident list. The recovery boiler contract list is maintained by Jack Clement for BLRBAC and AF&PA. It lists all of the recovery boilers in North America, by operating company, and includes: location; year of start-up; manufacturer’s contract number; manufacturer; design capacity, temperature and pressure; lower furnace wall tube material; tubing supplier; floor tube material; and remarks. The ESP critical incident list is a chronological list of all the critical incidents that have been reported to BLRBAC. We don’t currently have a policy regarding release of this information to either member companies or non-member

companies. The Executive Committee couldn't think of any reason that the information shouldn't be available to anyone who wants it, and it was suggested that it be posted to the BLRBAC Web page. The decision was made to take a vote of the membership during the Fall 2005 meeting to determine if these two lists should be posted to the Web page. Each item will be voted on separately.

- BLRBAC and AF&PA are sponsoring a water treatment and chemical cleaning seminar that starts at 12:30 on Wednesday. There is still room available if anyone would like to register.
- There have already been several discussions of problems that have occurred with Rotork ESP valves with smart actuators. Dean Clay has volunteered to follow up with Rotork and try to get them to issue a safety bulletin.
- At 10:00 o'clock this morning there will be two technical papers presented;
  "Induction Heating Tube Shrinking for Generator Bank Retubes"
  "Practical Experience of an On-line LEL Analyzer for Pulp Mill DNCG System Control."

3. **TREASURER'S REPORT** – Ron Hess

   BLRBAC maintains two financial accounts; a CD and a checking account. The balance in the CD account right now is approximately $13,450 and the checking account balance is approximately $54,500. Of course, that is before we pay the bills for this meeting. We are in good shape financially and continue to maintain a positive balance between income and expenses.

   IRS forms for 2004 tax year have been completed and were submitted in March 2005.

   As far as the attendance for this particular meeting, we had 175 Advance registrations and we had 32 At Door registrations. Of those registered, we had 34 paper companies represented; 6 insurance or insurance service related companies; 4 boiler manufacturers; and we had 30 Associate members attending and seven guests of member companies.

   Once again, for this meeting we had quite a few offshore guests. We had three from Columbia; five from Indonesia; one from Singapore; one from Japan; one from France; four from Brazil; three from Sweden; one from Finland; one from France; two from South Africa; and four from Thailand. We really appreciate the efforts of those people to attend our meetings and participate.

4. **SECRETARY'S REPORT** – Mike Polagye

   Just as a reminder, all communication by BLRBAC with its membership is via e-mail and the BLRBAC Web site. All designated representatives, alternates and attendees at this meeting will receive a notice when the minutes from this meeting and any other material is posted on the Web site and will also receive notice of when the Fall Meeting Registration material has been posted. Once you are added to the BLRBAC mailing list, you will remain on unless your e-mail address changes or you as to have

your name removed. Barbara Holich, Secretarial Services for BLRBAC, tries to keep straight and follow-up on Regular and Associate member company representatives and alternate representatives so that people in the company and member companies are notified and they are then responsible for passing notification of the BLRBAC meeting notices and meeting minutes to the members of their organization. However, it's not possible for her to this for every name on the list. Therefore, if your e-mail address changes and you want to continue receiving communications from BLRBAC, it is important that you notify Barbara. Give her your old address (for verification purposes) as well as your new address

Also, again as a reminder, BLRBAC materials and all the Recommended Practices are posted on the WEB Site. They are not copyrighted. There is no charge for downloading them. We encourage people to download, print them out and to use them. They represent the best practices that we, as committee members and as BLRBAC can offer for safe operation of recovery boilers and we certainly encourage people to avail themselves of that guidance.

SECRETARIAL SERVICES REPORT – Barbara Holich

It is required that each regular member company (boiler insurers, boiler operators and boiler manufacturers – voting members) keep me advised of names and e-mail addresses of their designated Representative and designated Alternate Representative. Preferably they will be employees who regularly attend BLRBAC meetings and who participate on one of the BLRBAC subcommittees. It is the member company's responsibility to keep me informed of any changes in representation by e-mailing me a letter stating the changes in responsibility and/or any e-mail changes.

Anyone who wishes to be added to the BLRBAC e-mail list, please e-mail me (fhholich@aol.com) your name, company and e-mail address.

I need someone to take the initiative to keep me advised of any member company name changes, mergers, etc. so that the BLRBAC database can be properly maintained.

No changes are made to the database until written (e-mail are acceptable) notification is received. I keep a file folder for each member company that includes correspondence naming the Representative and Alternate for each organization. These letters usually contain the e-mail addresses I must have in order to maintain the BLRBAC address book. Therefore, be sure that I have your current working e-mail address. BLRBAC notice of meetings and meeting minutes will only be sent via e-mail. If an e-mailed notice is returned to me as "undeliverable," that e-mail address will be deleted from the BLRBAC database.

If you are a designated Representative or Alternate Representative for your organization and something happens wherein you will no longer be functioning in this capacity, such as, retirement, occupational change, downsizing, etc., please let

me know or supply me with the name and e-mail address of whomever will fill your vacated position within BLRBAC.

Mrs. Barbara Holich
1005 59th Street
Lisle, IL 60532
fhholich@aol.com

5. **SUBCOMMITTEE REPORTS**

5.1 **ESP SUBCOMMITTEE REPORT** – John Andrews
(Also See ***Appendix A*** – Incident List)

The ESP Subcommittee met in closed session on Monday April 5th with all 13 members represented. John Philips is now the Subcommittee representative for Andritz, replacing Ralf Holm who had served the committee well over the last seven years.

The Subcommittee met in open session on Tuesday morning April 5th with all 13 members represented and about 190 guests. During the open session, the Subcommittee reviewed 36 incident reports from North America. Of the 36 incidents, there were no explosions. Fifteen (15) of the incidents were leaks classified as critical incidents and 19 were non-critical incidents. An ESP was performed in 14 of the incidents including 10 of the critical incidents. There were two ESP's reported with no leak found on subsequent inspection. The Subcommittee had received notice of a dissolving tank inspection but the incident report was not submitted prior to the meeting. It is expected that the report will be available for the Fall Meeting.

The basic definitions of Explosions, Critical Incidents and Non-Critical Incidents as established by the Executive Committee in September 1999 are summarized as follows:

Explosions: Only if discernible damage has occurred. This does not include incidents where there is only evidence of puffs or blowback alone. With the new emphasis on damage, more attention will be given to the extent of damage and the amount of downtime for the damage repair (as opposed to total downtime that includes other activities).

Critical Incidents: All cases where water in any amount entered the recovery unit forward of isolating baffles (and therefore would be a similar criterion to the need to perform an ESP). This includes leaks of pressure parts of all sizes. Since small leaks often wash adjacent tubes to failure, this category is important to our learnings. This new definition will result in more entries for the Critical Incident list. (This new category is being re-titled Critical Incidents, rather than Critical Exposures, since we are not restricting the cases only to "exposure" of smelt to water, as in

the past.)

Non-Critical Incidents: Those cases that could not have admited water to the boiler cavity defined above.

Incident Locations

The general locations of the leaks for boilers in North America are shown in Figure 1, which displays a typical boiler, not representing any particular style or model. The yellow marks are the non-critical incidents and the red were listed as critical incidents. The leaks locations are summarized as follows:

- 13 – Economizer
- 7 – Superheater
- 10 – Wall Tubes
- 2 – Floor Tubes
- 2 – Generating Bank

Root Cause

The determination of the root cause is somewhat of a subjective determination by the Subcommittee based on information in the reports. The breakdown is listed below:

- 10 – Fatigue
- 5 – Thermal Fatigue
- 5 - Unknown
- 4 – Weld Failure
- 6 – Corrosion / Erosion
- 2 - Mechanical Damage – Arc Gouge
- 1 – Overheat

How Discovered

Operator observations during boiler walkdowns continue to be the prevalent method of detecting leaks and accounted for identification of 26 of the leaks. Four (4) of the leaks were identified by the control room indications and Leak Detection Systems identified 2 of the leaks.

Leak detection systems were installed on units in 16 of the incidents. The mills reported that the leak detection system provided the initial indication of the leak in 2 incidents and that the system confirmed the leak in 2 other incidents. Several of the reports commented that the leaks were so small they were probably below the sensitivity of the detection system and 6 of the units with leak detection systems reported leaks in the economizer section, which would

not be expected to be detected by the installed leak detection systems. It is important that mill operations be familiar with the capabilities and the shortcomings of any leak detection system installed.

Two reports included leaks found during hydrostatic testing.

Incident Review

Appendix A contains a summary of the incidents reviewed during the meeting.

Figure 2 shows the critical incidents reported each year. The 15 critical incidents reported this year represent half a year so most likely the total for the year will continue to be above the recent average.

Figure 3 shows that the predominance of explosion history for the recent past has been dissolving tank explosions with two explosions last year. Although none are reported so far this year, we are expecting a report on a dissolving tank explosion that occurred at Weyerhaeuser mill in Kingsport, TN. Fortunately, there have been only four boiler explosions in the last 10 years.

Figure 4 shows the five year running average of smelt water explosions and gives a good indication of the progress that has been made in reducing smelt water explosions with only two incidents reported in the last 5 years.

Figure 5 is a plot of explosion history per 100-boiler operating years. The smelt water explosion experience is continuing to trend down over time, but the total explosions seem to be starting to level off at just under 1.2 explosions per 100 boiler years. That includes all causes combined, and is being driven by the recent dissolving tank explosions. The factor is calculated by a summation of all reported explosions since 1948 divided by a summation of the number of boilers reported in service each year during the same period. We all need to continue the making the efforts to try to keep that trending down. Effort should be focused in developing better procedures to handle heavy smelt runs and plugged spouts.

Learning's

There were several reports that had similar leak locations and causes that indicate areas for emphasis during future inspections. One area for inspection on older, two-drum B&W units is the riser tube between the steam drum and the end plate of the sidewall header closest to the drum to see if cracking is occurring. Another area for inspection is to look for cracking at the membrane termination where the rear wall nose tubes open up to form a screen between the superheater and generating bank. Two reported floor tube leaks suggest that it is a good idea to check for possible thinning at welds in the floor, especially on flat floors.

Two mills reported problems with "smart" actuators for Rapid Drain Valves such as the Rotork IQ Mk. 1 and Mk. 2. Mills with those actuators installed need to confirm proper configuration and wiring to assure proper operation in Rapid Drain Valve service and also need to periodically replace the backup battery.

Eight-Foot Rapid Drain Level

There were several incident reports submitted that included information from the floor tube thermocouples. All of the reports indicated that the floor went dry after the ESP.

The Subcommittee is still soliciting data on that to try to further evaluate if there should be a change in that 8 ft. level. The technique to determine the water level in the lower furnace after an ESP is posted on the BLRBAC web site under the section "Recommended Practices". This is a simple system that can only be used after it is safe to reenter the building and there is no pressure on the boiler. Please report any information on floor tube temperatures or actual water level measurements after an ESP on the ESP Questionnaire. Jack Clement will maintain an archive of information submitted on floor water level information following an ESP.

ESP Document Changes

Several changes to the ESP document were approved at the last meeting and have been incorporated into the latest revision of the Emergency Shutdown Procedure Guideline that can be found on the BLRBAC website.

Clarification and Questions

The Subcommittee had additional discussions concerning a possible need to perform an ESP in the event of an Earthquake following some additional information provided by a mill in New Zealand. The position of the Subcommittee remains that an ESP is not recommended unless water is suspected to be entering the furnace. The mill may want to consider securing fuel supply lines to reduce the potential for fires. Mills that are in earthquake zones should develop a procedure and train operators on proper response to an earthquake event. The New Zealand mill has also installed a seismic switch that is set to trip the boiler at a 5.5 Richter earthquake.

A question was submitted about the need to shut off the steam to the Direct Black Liquor Heater as part of the ESP if the black liquor pump continues to recirculate after the system has diverted. The intent was to prevent the possibility for flashing of the liquor in systems that maintain the black liquor pump in operation and to prevent flashing and possible forcing black liquor into

the furnace for systems that trip the black liquor pump. The Black Liquors Safe Firing Subcommittee has recently changed the recommended trip logic for the black liquor system to include tripping the black liquor fuel pump as part of a black liquor trip. Mills that operate systems that maintain the black liquor pump in service should review their system to assure that liquor flashing would not be possible if they plan to maintain the heater in service.

The Subcommittee discussed a request on the need to close the steam stop valve on an ESP in order to maintain pressure on the unit until the relief valve opens to assure rapid drain. Mills need to review their specific situation to determine if closing the valve should be part of their specific procedure. Examples of situations that may require closing the main stop valve would be if the recovery boiler is the only unit on a high pressure header such that a trip of the boiler would allow the header pressure to quickly decay or if the unit does not have a non-return valve, or the non-return valve is unreliable to prevent backfeeding steam into the drum during following an ESP.

The Post ESP Procedure document states that "consideration should be also be given to isolating the feedwater header and all steam headers (with the exception of the header providing steam to the smelt shatter jets) if it can be done safely from remote locations."

There was a request for clarification of the statement in the ESP document that requires "a dedicated, stand-alone system" for initiation of the ESP. The Subcommittee discussed the nature of the ESP system and some differences in the system from the other Boiler Safety Systems. The ESP system is generally an "energize to trip" system that relies on energizing outputs to initiate the desired functions where the Boiler Safety Systems are de-energize to trip. Because of that, the input and especially the output components must have maximum reliability. In addition, the ESP system uses relatively simple logic where one action initiates all functions of the system.

The Executive Committee has proposed the formation of a working group with participation from the ESP Subcommittee, the Instrumentation Subcommittee and the Executive Committee to review the recommended system for imitation of the ESP. Any comments or suggestions on the matter would be greatly appreciated.

Revised ESP Questionnaire

The ESP questionnaire form has been simplified so that it will be easier to fill out and is more interactive. You will fill out certain sections depending upon the type of incident and the form contains a table that tells you which sections you need to fill out and which sections you can leave blank.

Questionnaires received less than two weeks prior to each BLRBAC meeting will be held to the following meeting for reporting in order that a summary of the incidents that will be reported at the meeting can be included in the registration packets.

The Questionnaire has been updated based on comments received by the Subcommittee so, whenever you need to fill out an ESP Questionnaire please go into the BLRBAC Web site www.blrbac.org and pull up the latest copy of the form. The form can be filled in electronically and sent in by e-mail to jlclement3315@sbcglobal.net or it can be printed out and filled in by hand and mailed in. Either way is appreciated. Just be sure to fill it out and send it in.

The Subcommittee has found it very helpful to project visuals included with the ESP questionnaires when incidents are reviewed and is now copying visuals into a Power Point presentation to be used in the open session. Your help in ensuring good quality visuals, especially for those reports submitted as hard copy, is most appreciated.

CHAIRMAN: I'd like to comment on the BLRBAC database. The reporting of incidents is completely voluntary. Not every recovery boiler explosion or critical incident gets submitted to BLRBAC in an Incident Report. Those that are not submitted don't get into our database. We certainly encourage all our member companies to submit reports for any of their incidents so that everyone in BLRBAC can learn and understand the issues that each of us face.

ANDREWS: Yes, we certainly do appreciate all the mills that take the time to fill out the questionnaires and Incident Reports and send them in. Really that is what's driving the activities of this committee and provides the information for analysis. So, thank you.

CHAIRMAN: Thank you, John. I have several comments I would like to add. First of all we didn't see any incidents this time where operators failed to recognize that they had a major tube rupture. I don't know that there were any that fell into that category, but historically that is one of the areas where we are at greatest risk. When we have a major tube rupture, it is critical that the operator recognizes what has happened and immediately initiates an ESP. I think that is one of the areas that we, as operating companies and people in charge of that operation, need to make sure that we address in our training programs. In the past we have seen a number of incidents where there was a major tube rupture and the operator thought he had a draft tap that was plugged or an ID fan problem and he continued to put water in the boiler because of an inability to

recognize what was happening. This is one of the areas that we really need to concentrate on during operator training. It is also important for operators to understand the capabilities and the limitations of their leak detection systems. What can the leak detection system detect in the way of leaks? How does it respond to a major tube rupture? How long does it take? Can it recognize it immediately? Does it take it 10 minutes, 15 minutes, etc. to recognize a major tube failure? The different leak detection systems have different capabilities so it is important for the operator to understand that capabilities of the system he is using.

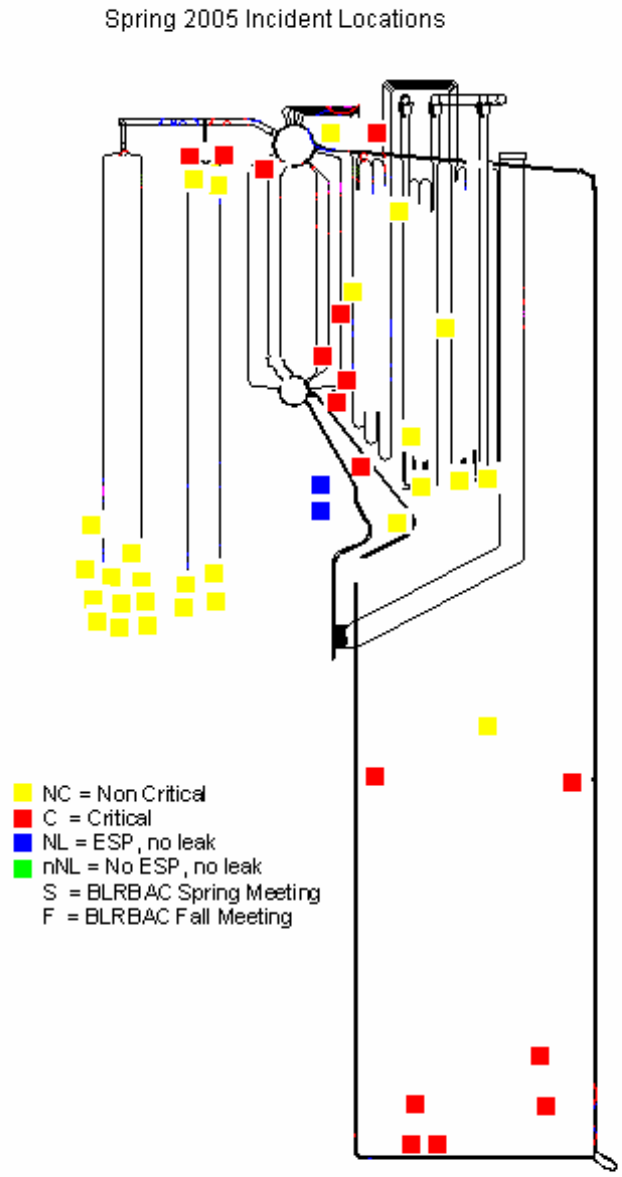

Figure 1

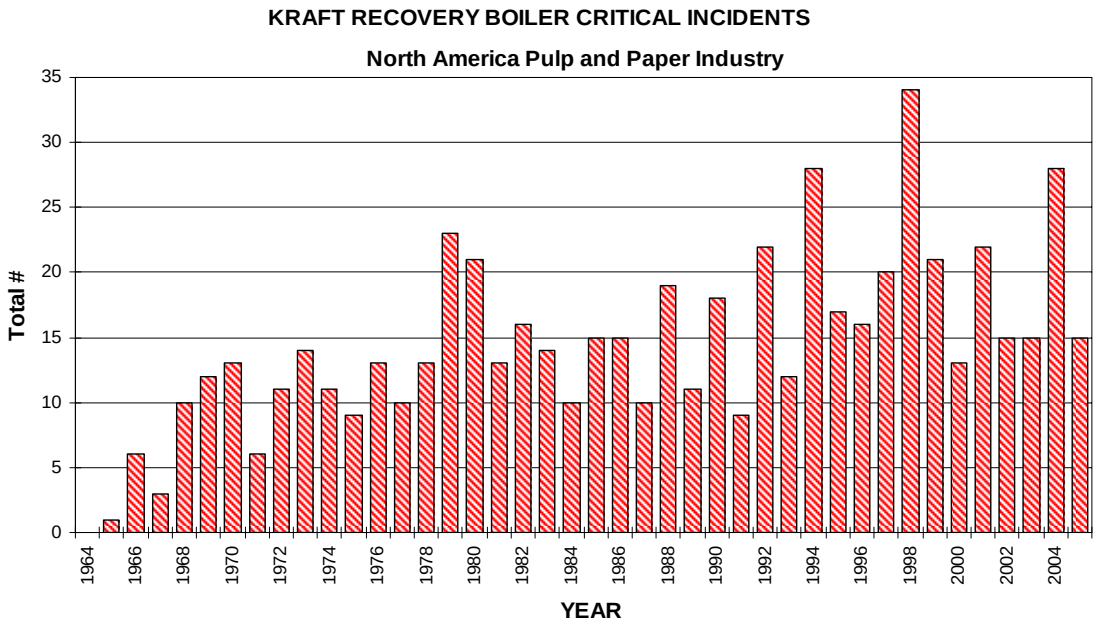

Figure 2

(Critical Incident Classification Began in 1995)

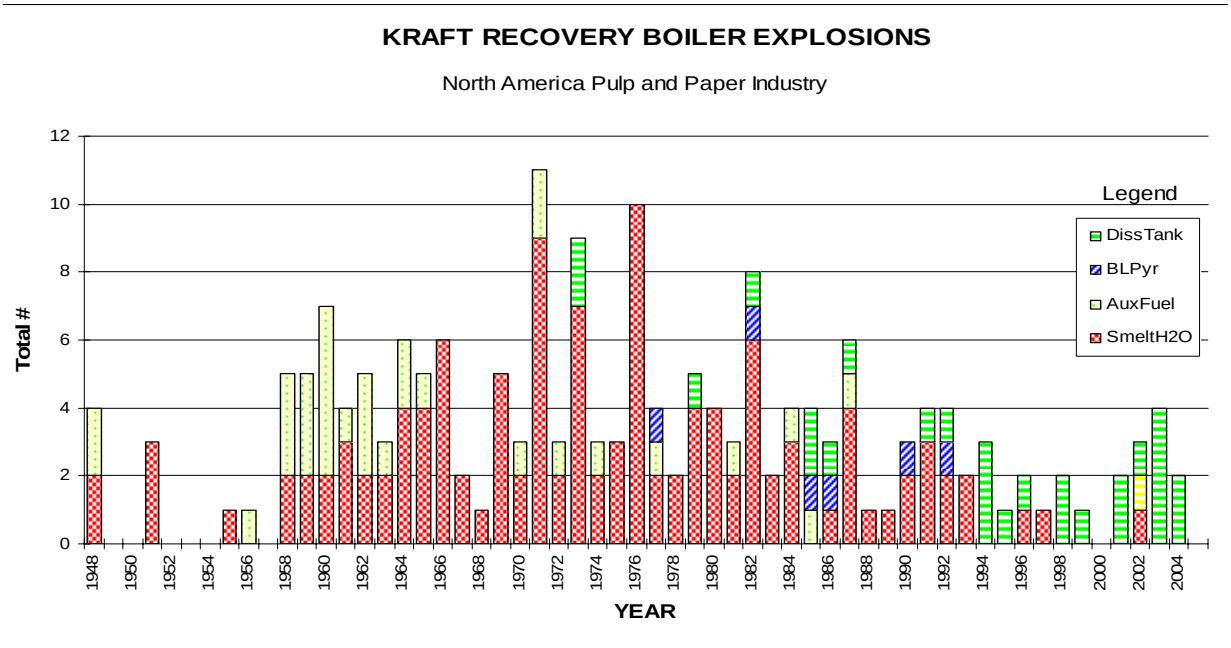

Figure 3

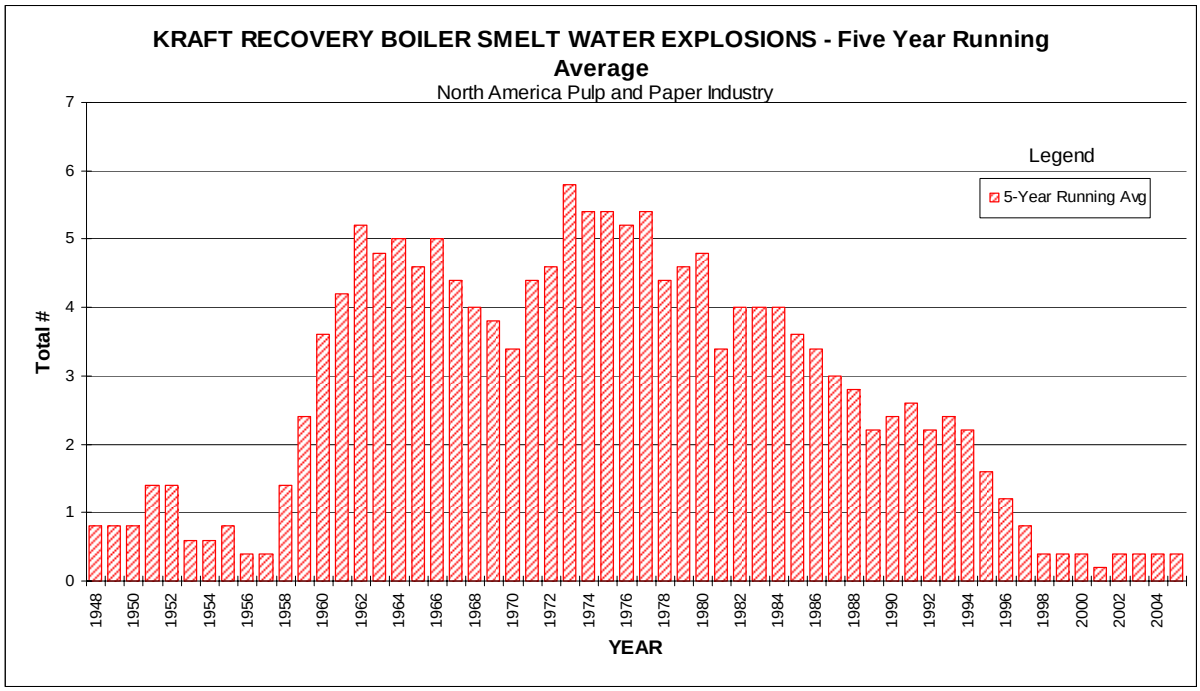

Figure 4

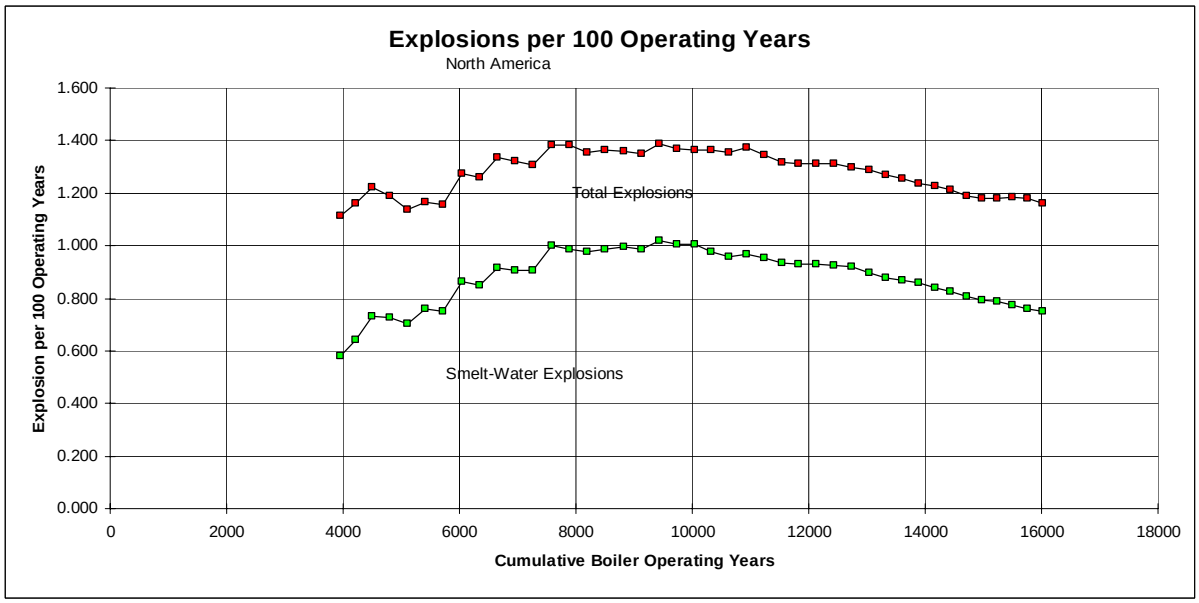

Figure 5

5.2 **INSTRUMENTATION SUBCOMMITTEE REPORT** – Bill McQuillan (substitute for Dave Avery)

The Instrumentation Subcommittee met in two sessions on Monday. The morning session had 12 members and three guests present. The afternoon session had 12 members and five guests in attendance.

We reviewed and evaluated Electron Machine Corporation's bench top critical angle refractometers as requested by the Safe Firing of Black Liquor Subcommittee. We actually had a demonstration of the analyzer by Electron Machine in our afternoon meeting. This bench top refractometer, like in-line refractometers, measures dissolved solids. The recommendation for off-line testing of black liquor specifies a total solids measurement. As such, the bench top refractometer does not meet this requirement.

We had a lengthy discussion on problems encountered with Rotork Actuators (the newer smart actuators specifically). There are programming issues to be dealt with when using them as well as concerns with battery life for programming integrity after a power interruption. We will be inviting Rotork to our fall subcommittee meeting to help us resolve any issues with these applications for our safety systems.

We worked with the chairman of the Fire Protection for Direct Contact Evaporators Subcommittee to get our document into agreement with theirs on required alarms and interlocks on units with DCE's.

We will be working with the other subcommittees of BLRBAC on similar requests as needed.

Rick Matarrese from FM Global couldn't attend this meeting and he has the database for us to include the Waste Streams Subcommittee requirements into our document. He is working on this and hopefully will have it ready for us to review at the fall meeting.

Finally, I'm sure Dave Avery would like me to extend an invitation to anyone in BLRBAC who has an interest in the subjects we are working on to attend our fall meetings.

Thank you and I hope to see all of you again in the fall.

5.3 **MATERIAL & WELDING SUBCOMMITTEE REPORT** – Dan Phillips

The Welding and Materials Subcommittee met in two separate closed sessions Monday. The morning session was a closed working session with approximately 18 attendees: 12 members and 6 visitors present. There were no other open meetings in the AM, and several visitors joined in participation. Attendees included 6 Recovery Owners, 1 Insurance Rep., 1 NBIC Rep., and 5 Contractors/Vendors. The afternoon meeting was with 18 attendees also.

Visitors and new attendees on the subcommittee, including Mary Russ from IP, and two repair contractors, opened the meeting with introductions. Dan Phillips advised the subcommittee of Jim Dixon's departure from the group, and that Dave Furhman of International Paper will serve as Vice Chair.

Dan Phillips summarized the working document titled Draft 2005-1, and relayed some of the feedback he has received from the subcommittee team members and Committee members. Dan told the subcommittee that the submission to the Executive Committee of the draft document 2005-1 was for formatting and intent approval *only* as the forwards, table of contents, bulletins, and procedure guidelines submitted were not in final revision. In the past meeting, the subcommittee concurred that the bulletin and procedural guidelines format is the best manner of providing a quick reference guide for operators and repair contractors. The three guest Owner - Operators in attendance offered their agreement of the format and intent.

As has been the intent of this document, revisions and changes will be part of the evolution. It was decided that the current revisions be tracked at the footer of each bulletin along with the current stage of approval process. The operators present requested some form of notification of revisions. The subcommittee tabled this idea for future consideration to find out how BLRBAC currently handles such tasks. *{Secretary's note: When the notice is sent out by e-mail that the meeting minutes are posted on the BLRBAC Web site, the notice includes a list of publications that have been updated. Also, updates are highlighted on the Web site itself.}*

David Lang posed a question to the repair contractors: How can you benefit from such a document? The response was that the mill often requires the repair contractors to know and understand more of the BLRBAC recommendations and procedures due to turnover of engineers, etc. It will be beneficial to have a reference guide to determine welder qualification requirements, recommended repair & welding guidelines & procedures, Pre- and Post- repair NDT methods and temporary versus permanent repairs, etc...

Current status of the Draft Document:

The General and Welding Forwards were approved for submittal to Executive Committee (EC) by the subcommittee. The subcommittee will next create Forwards for the Membership Surveys, and Materials sections for submittal to the EC in the fall of 2005. A Definitions section of the document is being tabled for further review. Another possible bulletin will provide guidance on Code Calculations of Thickness requirements. At the end of the subcommittee meeting, the Materials Forward was presented and approved for submittal to the EC along with the General and Welding Forwards.

The subcommittee then broke into task groups to begin creating bulletins for 3 new sections and finalize the example bulletin written by Max Moscal for Stress Assisted Corrosion (SAC). The SAC bulletin was presented for approval of the subcommittee and should be ready to present to the EC in the fall of 2005.

Sections 2.0 and 3.0 were given to the same task group (weld repair of cracks in boiler tubes and weld repair of small holes in boiler tubes containing water).

The overlay task group decided that it was critical to create three bulletins: Repair of Corrosion Resistant Weld Overlay, Repair of Corrosion Resistant Composite materials, and Weld Build-up of Pressure Retaining tube material. Also presented was the idea of a definitions document as the word “Overlay” is confusing as presented in Section 5.0. The task group agreed that “Overlay” should be used for Corrosion Resistant Weld Overlay and “Weld Build-up” should be used for any pressure boundary restoration. Section 5.0 uses “Overlay” for all welding on tubes regardless of properties. The task group also believes that section 5.0 should be re-written to describe the build-up procedures only and a separate section or an addition to 5.0 should be introduced to deal with Corrosion Resistant Materials.

The last task group provided a bulletin for repairing small holes in SH tubes (steam circuits).

The teams were finalized and leaders designated to continue drafting. Dan Phillips will distribute the bulletins for subcommittee approval. At the fall 2005 meeting bulletins will be submitted for approval and the procedural development process will begin.

Additional comments & general suggestions

The subcommittee is committed to moving forward with these documents with the understanding that they are “living documents” and will be updated and edited as necessary to handle new technology developments and changes in approved procedures.

In closing, I'd like to take just a second and thank Robert Sullivan for all of his input. Robert will be retiring from the National Board at the end of this season. Thank you, Robert, for all of your many valuable contributions, constructive input and support during your attendance at BLRBAC. We really appreciate it.

Also, regarding "open" sessions, this time we had two "closed" sessions; but they won't be closed any more. We will have them open and encourage all guests to bring some questions. We won't have any shortage of things to talk about when it comes to welding and repair. If there are any particular items you would like to bring up at the open meetings, we would encourage you to send us something up front. My e-mail address is posted. Your questions will surely give us direction for topics of discussion also.

5.4 **PERSONNEL SAFETY SUBCOMMITTEE REPORT** – Robert Zawistowski

No report.

CHAIRMAN: The Personnel Safety Subcommittee didn't meet this time. Currently they are on a one meeting per year schedule. So they will meet again in the fall and will then have a report.

5.5 **PRESS RELEASE & PUBLICITY REPORT** – Craig Cooke

No report.

CHAIRMAN: We talked to Craig and he had about a half-hour presentation to give us; so we decided to cancel that. Seriously, Craig is a subcommittee of one, and he continues to do a fine job of getting information about BLRBAC out to organizations and publications of interest to our industry.

5.6 **SAFE FIRING OF AUXILIARY FUEL SUBCOMMITTEE REPORT** – Dave Streit

The Auxiliary Fuel Subcommittee met in open session on Monday afternoon in the Fitzgerald room. There were four members/alternates and six guests present at the meeting.

There was no meeting during Fall 2004; therefore there were no agenda items carried over from the previous meeting.

Because there were no carry over agenda items, the only item discussed was a request from the Executive Committee regarding verification that the instrument requirements as listed in the Auxiliary Fuel Safe Firing Practices was compatible with the Instrument Checklist included in the "Checklist and Classification Guide for Instruments and Controls" document. A verification check was made several years ago, but there could have been changes made to either document since that time that could cause incompatibility. It was agreed

that we would review the two documents. Dave Streit and Bruce Knowlen will each review the two documents and determine if the instrument requirements are consistent. The results of the review will be reported at the next scheduled Auxiliary Fuel Subcommittee meeting.

There was discussion regarding how to determine the appropriate size of a continuous igniter. The NFPA standard 10% size is not defined in the Auxiliary Fuel document. It was the intent of the subcommittee when the changes to the igniter definitions was made several years ago, that operating experience, Manufacturer's recommendations, and/or testing, could be used to determine the appropriate igniter size. Therefore the sizing basis would be empirical and most likely would be different for individual boilers based on operating conditions. *{Secretary's note: The reference to the NFPA standard 10% size igniter refers to Class 1 igniters that are designed to reliably ignite any credible fuel-air mixture through the burner. Typically these igniters have a heat input of 10% or more of the burner heat input, but this is a guideline only and igniting capability needs to be verified by test. There are igniters smaller than 10% that satisfy the requirements of Class 1 igniters and simply being 10% or more does not automatically qualify an igniter as Class 1.}*

There was some discussion regarding whether or not the Auxiliary Fuel Subcommittee was/is the proper venue to work on guidance for the addition of petroleum coke to black liquor to supplement heating value or to increase steam production using a low cost fossil fuel alternative. It was believed that the Safe Firing of Black Liquor or the Waste Fuel Subcommittees would be the more appropriate subcommittees to work this issue. This question was raised to the Executive committee. *{BLRBAC Secretary's note: The Executive Committee decided this belongs with the Safe Firing of Black Liquor subcommittee.}*

Since there were no further issues or concerns to discuss, the meeting was adjourned. Unless urgent issues are raised that warrant a meeting in October, the next meeting of the Auxiliary Fuel Subcommittee will be April 2006.

5.7 **SAFE FIRING OF BLACK LIQUOR SUBCOMMITTEE REPORT** – Mark Sargent

The closed meeting was held in the morning with nine of ten members present. The nine members and 40 guests attended the open meeting in the afternoon. The following items were discussed and acted on during the sessions:

a) The Fall 2004 minutes were reviewed & approved.

b) A number of grammatical changes to the changes approved at the April 2004 meeting for the Safe Firing of Black Liquor document were developed last October were discussed further at the closed meeting. Agreement by

the subcommittee was reached on these changes and they will be submitted to the executive committee for final review and approval. *{Secretary's note: It was agreed that the additional changes were editorial only and do not change the technical content of the document. The revised document, dated April 2005 is posted on the BLRBAC Web site.}*

c) Several comments were received noting that Figure 5 does not reflect the piping arrangement for "High Solids" systems. The subcommittee is going to proceed with a separate revision that will add a figure (Fig 5A) and explanation for systems that use pressurized storage tanks and fire at "high solids" (greater than 75%).

d) The Instrumentation Subcommittee reported back that they do not recommend accepting the "bench top" refractometers as an "acceptable" device to cross check the on-line refractometers. No further action will be taken on this item until such time as the industry at large expresses interest in allowing off-line refractometers to be used for cross checking on-line refractometers.

e) One request for clarification was received since the spring 2004 meeting. A location asked if it was permissible to use a short time delay on the interlock that diverts black liquor when either the steam flow or Black Liquor flow drops below 30% of full load. The subcommittee responded that we couldn't advise on the installation of timers to eliminate nuisance trips. We further suggested the member mill contact their underwriter for more guidance regarding installation of timers or other devices to address the low steam flow and low liquor flow issues.

f) The subcommittee reviewed information about a dissolving tank incident that occurred at the Weyerhaeuser location in Kingsport, TN. We suggested a formal ESP incident questionnaire be submitted so the incident can be logged into the database.

g) Another dissolving tank incident was shared with the Subcommittee after our meeting adjourned and the company was given e-mail addresses and the BLRBAC website so that an ESP incident questionnaire can be filled out and submitted.

h) A number of questions from the floor were fielded & discussed.

Contact Mark Sargent at 513-248-6086, e-mail mark.sargent@ipaper.com , or fax 513-248-6679 with questions or comments.

5.8 **FIRE PROTECTION IN DIRECT CONTACT EVAPORATORS SUBCOMMITTEE REPORT** – Chris Jackson

Although no meeting was held, there are subcommittee actions to report:

The draft document placed out for review last October received one small requested revision. The document was accepted by the Executive Committee and is posted on the BLRBAC Web site.

In an email dated December 27, 2004, Mike Polagye, Secretary of the Executive Committee, requested that the FP for DCE Subcommittee review the Safe Firing of Black Liquor and Safe Firing of Auxiliary Fuel for differences in the requirements for permissives and interlocks among the three documents.

After a review of the Instrumentation Checklist the lack of a High Temp Alarm/Trip positioned at the inlet to the precipitator was the only gap. The Chair of the FP for DCE Subcommittee met with the Instrumentation Subcommittee at their regularly scheduled session, to discuss this High Temperature Interlock described in the Fire protection for DCE document, but not listed in the Instrumentation Checklist. This was a first effort to see if there were any issues that might arise if an additional interlock was added to the list. The other subcommittees will review their documents to see if changes need to be made to make them consistent with each other.

Early in 2005, a mill with Cyclone Evaporators suffered a significant fire. Due to an ongoing investigation, the particulars of this event are not yet available. It is expected that in October, an incident report will be submitted to the FP for DCE Subcommittee and a representative of that company will be invited to make a presentation to the subcommittee. As there are significant lessons to learn from the investigation of this event that could bring value to the membership, it was decided that in addition to the subcommittee meeting, the incident would be discussed at the end of the open ESP Subcommittee on Tuesday during the October 2005 meeting or, if time runs out, after lunch before the start of the Operating Problems Session.

The subcommittee will hold an Open meeting at the fall session.

CHAIRMAN: As Chris mentioned, in the future if we have any fires in direct contact evaporators to report on, we will do that at the end of the ESP meeting. If there is not enough time because we have a lot of incidents to review, then we will do it at the start of the Operating Problems Session directly after lunch.

5.9 **WASTE STREAM SUBCOMMITTEE REPORT** – John Rickard

The Waste Streams Subcommittee met in closed session at 8:00 AM on April 4, 2005 with 13 members present.

The first item of discussion was a mill that could operate their recovery boiler stably at 35% load although our guidelines call for 50% minimum load before introducing waste streams. Discussion concluded with the subcommittee deciding that this is a unique case because most recovery boilers are highly loaded and that we would add an explanation to the guidelines concerning the purpose of the 50% minimum load. The explanation would allow a mill to take an exception to the guidelines while meeting their intent.

The Instrumentation Subcommittee has requested a comparison of their Instrument Checklist with our recommended practice. Craig Aderman will make this review and contact the Instrumentation Subcommittee with the results.

The subcommittee reviewed additional comments from the Executive committee on Chapter 6, Blending Liquid Waste Streams with Black Liquor. The subcommittee discussed the comments and decided how to incorporate them into chapter. John Rickard will revise the chapter and resubmit it.

Hank Beder presented a summary of our questionnaire on chip bin vents. This review educated subcommittee members concerning the variety of chip bin designs and also about the bin designs that are more hazardous. Chip bin vent gas normally operates at a combustible concentration that is below its lower explosive limit (LEL). However, some chip bin vents can have a sudden increase in combustible content such that the vent gas becomes explosive. If the chip bin vent is handled in a separate line from the other DNCG gases, then neither existing guideline (DNCG nor CNCG) is designed for a gas that can be either dilute or explosive. Hank and Paul Seefeld have drafted a revision to Chapter 4 (where chip bin vents are presently addressed) that uses a steam ejector to convey the vent gas to the boiler in the manner of the CNCG handling method. It will also require venting of the gas when operating parameters such as bin level or gas temperature are exceeded. Their revision will be discussed at our next meeting.

Work on Chapter 7, Liquid Waste Streams in a Dedicated Burner, is on hold while the chip bin vent guidelines are finalized. Bentley Sherlock wrote the draft of Chapter 7 and he will be its custodian until we resume work on it.

The afternoon session convened at 1 PM in an open meeting. There were 12

subcommittee members present and 13 visitors. Ari Tamminen of Enwin Oy and Debra Woods-Haley of Control Instruments Corp, each gave a presentation on LEL detection. These presentations were very timely because the technology is very important for chip bin vent gas. Both presenters were helpful in our understanding their equipment and in our gaining a general knowledge of explosive gases.

Following the presentations we concluded our discussion of chip bin vents. Two of our visitors shared their experience with LEL detection.

Another topic that will require guidelines is incineration of gases from the dissolving tank vent directly into the recovery boiler. This system is being used on new recovery boiler installations including two new recovery boilers in North America. Hopefully the subcommittee can avoid a logjam of present work and get started on this chapter soon.

6. **AMERICAN FOREST & PAPER ASOCIATION REPORT** – Tom Grant

The AF&PA Recovery Boiler Program is continuing in its efforts to produce greater awareness of safe practices and improvement in the operation, maintenance, safety and efficiency of recovery boilers.

Membership

Currently, we have 31 companies in the Program including eight non-AF&PA member companies. We have a couple of other companies that are not in the Program. We will continue to encourage them to join with the current members in the cooperative efforts for the safe operation and research to improve the reliability of the recovery boilers. All companies operating recovery boilers gain directly from the benefits of the Program.

Operational Safety Seminars

Three Operational Safety Seminars are scheduled for this year. The first will be held in Portland OR -- April 11th-12th followed by the other two in Atlanta, April 26th–27th and May 10th–11th. We have about 45 registered for the Portland seminar and about the same number for the two seminars in Atlanta. If you wish to send some one to any of these, we still have room for them. We will cut-off at 64 attendees. We never seem to have the right dates for everyone's outages, but we try. Some mills have asked that we look at the possibility of two things: first - would mills prefer to have a one-day seminar to allow those attendees driving from nearby mills to travel to and from the seminar in one day rather then two round-trips; second - would mills consider having a two-day session to cover additional instruction for AF&PA and BLRBAC guidelines and training. We will be surveying the mills shortly on these questions. Each year we are concerned with the Portland seminar due to limited attendance. Twice in the last 6 years we had to cancel it due to lack of registrations. A few mills on the West Coast continue to support the seminars by sending people, while others do not.

Explosion Monitor

Mr. Jack Clement continues in his role as the AF&PA explosion monitor. He is also working with the BLRBAC ESP Subcommittee on collecting, reporting and tracking recovery boiler incidents.

Training Program

The Committee worked with Power Specialists Associates (PSA) in converting the AF&PA Recovery Boiler Training Program to use for computer-based training (CBT). It is now in place and available through PSA. Notices were sent to all member representatives, superintendents and training coordinators. Information may be found on the AF&PA and PSA websites. Ron Bernard of PSA has information available here and may be reached to arrange a demonstration electronically at the mills. This arrangement has worked very smoothly at the mills that have already done this.

Non-Destructive Technologies for Detecting Water-Side Deposits

After reviewing the final report for Phase I of the study Non-Destructive Technologies for Detecting Water-Side Deposits, the R & D Subcommittee requested the Advisory Group for the project to follow through on its recommendations to send RFP=s for Phase II. Proposals were reviewed by the Group that decided that there were some good roads to pursue in two of the proposals and prepared a path forward. EPRI had also indicated interest in similar research into this area and was agreeable to working with the Group and possibly adding to the funding. The Group made recommendations to the R & D Subcommittee with possible alterations to one proposal to reduce costs, yet enhance research at the mills. Several different technologies would be studied before selecting one, and possibly joining with a vendor to commercialize the method. The ultimate goal of the project is to develop effective and productive non-destructive methods for identifying waterside deposits in furnace wall tubes without having to remove sections of the tubes.

The Advisory Group plans to revise the proposal so that 4 technologies, including laser UT and a heat flux method may be studied. We expect Phase II of the project will be underway shortly and be completed in approximately a year.

Joint Seminar with AF&PA and BLRBAC Planned

AF&PA and BLRBAC are sponsoring a joint seminar for water treatment to be held after this BLRBAC meeting. Mr. Dean Clay of IP is heading up the Task Group for the seminar.

Study for Review Analysis of Economizer Tube Failures

AF&PA decided to do a study to review the economizer tube failures. This study was undertaken due to the recent increased number of economizer leaks. At the February AF&PA Conference, Tom Grace and Jack Clement reported on the progress that had been made for the analysis of Economizer Tube Failures. BLRBAC, AF&PA, manufacturers records as well as Scandinavian records have been reviewed. The

lacks of solid information on the nature and number of failures were revealed. Information has been tabulated on 263 economizers in the U. S. and 79 in Canada. The Swedish report includes 41 incidents while the Finnish report shows 92 incidents since 1983 and 24 of these since 2000. Most of the U. S. reports showed multiple failures - some large numbers of failures, and these have been categorized. Critical failure areas were shown and the reasons for these were labeled. Phase I of the study should be completed shortly. Data is being sorted on spreadsheets to aid in analyzing failure categories to determine root causes. Phase II of the study will continue once these data are sorted out. We want to thank the many mills and manufacturers who have made information available and enhanced the reports studied.

Revised AF&PA Recovery Boiler Safety Audit Guidelines and Guidelines for Specification and Construction of Black Liquor Recovery Boilers

Back in 1990, the Operation and Maintenance Subcommittee developed the ARecovery Boiler Safety Audit Guidelines≅ based on a general consensus of procedures employed in pulp mills. The Subcommittee reviewed the document and released a revised up-to-date version designed for industry generic safety programs. Copies of the revised document were sent in November 2004 to all member companies, including representatives, superintendents and training coordinators. A special thanks goes to the members of the Committee, especially John Andrews for his dedication and intensive work in reviewing comments and coordinating these revisions.

The Committee also updated the AGuidelines for Specifications and Construction of Black Liquor Recovery Boilers.≅ This document was revised a few times since it was first published in 1986. These Guidelines were based on past and current boiler failures and associated operating problems, and through discussions with industry operating personnel, equipment manufacturers and construction personnel. This document is not intended to serve as a complete boiler specification but can serve as a checklist of major topics and items to be resolved by the manufacturer and the user during boiler specification and proposal discussions.

Again, this document was distributed to all member companies in January 2005. John Andrews is again to be thanked along with Jack Clement for the outstanding job that was done to update the document with the Committee.

Other Research Projects Under Review

The Committee is also considering a study for A**Causes of Smelt Spout Cracking and Failures on Chemical Recovery Boilers**.≅ The objective of this study is to review the frequency of smelt spout cracking and corrosion; the correlation of spout failures with water-side deposits and other factors; prioritize and discuss research needs to achieve the goals. We are trying to coordinate with some DOE funded projects related to this.

Other projects being considered involve:

- High Temperature Protective Coatings to Simplify Inspection of Wall Tubes in Chemical Recovery Boilers;
- Testing of Ribbed and Rifled Tubes;
- Superheaters

Annual Meetings and Conference

AF&PA=s annual Recovery Boiler meetings and Conference was held February 8th and 9th in Atlanta. It was very successful. It was open to all operating companies, insurers and manufacturers. The presentations included reports on the projects currently sponsored by the AF&PA Recovery Boiler Program and subcommittee reports on their accomplishments. The object of the Conference is to keep not only the members advised, but also the remainder of the recovery boiler community, as well. We hope that many of you will plan to attend next year's Conference.

CHAIRMAN: Just a comment on the AF&PA Recovery Boiler Safety Seminar, the format that is used there for those who are not familiar with is, like Tom said, to have an ideal attendance of 64 people divided into eight groups of eight. They use actual BLRBAC Incident Reports as the basis for study and review what occurred in the mill. Then they ask the attendees to go back and comment on what was done correctly and what was done wrong or what could have been improved on. I think it is an excellent experience, especially for operators and supervisors, to review actual situations, think about them in depth, and decide how they would respond to a similar situation at their facility.

7. **TAPPI RECOVERY BOILER REPORT**
   No report given at this session.

8. **NATIONAL BOARD OF BOILER & PRESSURE VESSEL INSPECTORS' REPORT** – Bob Sullivan (See Attachment B)

   Like everybody else, the National Board has been very busy with a lot of things; but for BLRBAC I will limit this report to what's happening with the National Board Inspection Code (NBIC).

   The 2004 edition of the NBIC, which includes the 2004 Addendum, has been published. The changes for which BLRBAC members may have an interest include:

   a) A new Part RE where all pressure relief device repairs are now located.

   b) The appendix addressing inspection of Black Liquor Recovery Boilers have been rewritten. (See Attachment B.)

      {Secretary's note: Attachment B was given to BLRBAC as a "picture" PDF file. It was retyped for inclusion with these meeting minutes. If there are any discrepancies between the attachment and the NBIC, the NBIC governs.}

Many thanks to all who have contributed to the development of this material.

The next NBIC meeting is scheduled for August 15-18, 2005, in Spokane, Washington. Task groups meet on Monday; Subgroups meet on Tuesday and Wednesday; and the Main Committee meets on Thursday.

9. **WESTERN CANADA BLRBAC REPORT** – Bob Norton

The fall meeting was held in Vancouver on November 3, 2004. There were 35 members attending the session.

There were five incidents reviewed at this meeting with a summary below:

- Handhole leak on an economizer upper header – May 31, 2004
- Left hand side composite floor tube leak adjacent to the sidewall – July 22, 2004
- Right hand side floor tube leak adjacent to the sidewall – August 23, 2004
- Cold side leak just above the spout mounting box – February 11, 2004
- Sootblower wall box area, left hand side, crack in tube – September 21, 2004

Reviewed the proposed changes to the BLRBAC documents presented at the Atlanta Fall meeting.

The boiler manufacturer's presentations were:

a) Aker Kvaerner
   - Recovery Boiler update on sizing and new installations

b) Alstom
   - Smelt spouts application

c) Andritz
   - Review of the liquor cycle around evaporators

d) Babcock &Wilcox
   - Induction heating for removal of tube bends in a generating bank with case history from Eastern mill.

The next meeting will be held in Campbell River with a mill tour on April 13, 2005.

10. ACTIVITIES OUTSIDE NORTH AMERICA REPORTS

{Secretary's Note: A report including a PowerPoint presentation was given updating the operating experience of recovery boilers in Sweden during 2004 and other recent and planned activities. The report was not made available for inclusion with these minutes.}

11. BLRBAC QUESTIONNAIRE SURVEY UPDATE – Len Erickson

During the fall of 2004, a membership survey was conducted. Approximately 41 people responded. The questions included subcommittee participation, applicability of the meetings, meeting facilities/hotel services, and suggestions to increase participation. (See the summary below).

One comment in the survey response was the lack of open subcommittee meetings on the first day, (Monday), of BLRBAC. The executive committee approved a resolution that all subcommittee meetings will be open meetings with the exception of the ESP sub-committee. The Subcommittee chairperson may identify a meeting as a working meeting and ask the visitors to refrain from active participation.

A subcommittee is being formed to review the survey and make recommendations to the executive committee at the Fall 2005 meeting. We intend to have the meetings via conference call with one summary meeting on Monday October 3rd. Four people have volunteered. We are looking for additional members, particularly from operating companies.

Summary of comments -- Fall 2005

- **Are you a subcommittee member?** Responses included:
  - Never been asked
  - Yes
  - Do not have the time
  - Geographic difficulties
  - Do not regularly attend

- **Are meetings applicable & informative**
  - 99 % of respondents said Yes

.

- **Suggestions for future meetings?**
  - More open meetings
  - Improve the operating problems sessions. Perhaps a technical focus possibly rotating technical subjects
  - Move technical sessions to operating problems
  - The Wed. (Business meeting) is of little value.

- **Are Hotel Services Satisfactory?**
  - Do we need this large of a facility
  - Rates are high
  - Yes 33 out of 41
  - Do we need to stay by the airport?
  - Do we need to stay in Atlanta?

- **Suggestions to increase participation**
  - One meeting per year
  - Work load makes it tough
  - Mini-presentations by mill reps
  - Move meetings out of outage season
  - Joint meeting with TAPPI Recovery Boiler committee.
  - Not enough notices, Corp reps do not distribute notices.
  - Mergers & business conditions have helped.

12. OPERATING PROBLEMS SESSION REPORT – Karl Morency

Approximately 40 questions / problems / opportunities were discussed in the operating problems session. The items discussed included:

- Liquor Nozzles and firing technique
- Green liquor turbidity
- Dissolving tank linings
- Walk downs and operator manning levels.
- Boiler Circulation
- Vibration bars and handcuffs
- Smelt Bed temperatures

Participation by the attendees was very good. There was nearly a full house. The session lasted approximately 1-½ hours. We are continuing to look for ways to improve the operating problems session.

TIME & PLACE OF NEXT MEETING: The next meeting will be held on October 3, 4 & 5, 2005, at the Crowne Plaza Hotel/Atlanta Airport, in Atlanta, Georgia.

ADJOURNMENT:

CHAIRMAN: I'd like to adjourn the meeting. Again, the Technical Presentations will start up right after a short break. Everyone have a safe trip home.

TECHNICAL SESSIONS:

1. Induction Heating: Safe and Rapid Generating Bank Tube Removal
2. Practical Experience with LEL Transmitters in DNCG Streams

ATTACHMENT A – SUMMARY OF RECOVERY BOILER INCIDENTS

SPRING 2005- 1	
Location:	**MeadWestvaco, Charleston, South Carolina**
Unit:	B&W Contract PR-206. Startup 1984.
Size:	4.5 million ppd solids. 691,000-lb/hr steam. Operating at 1450 psig & 880F. Design at 1725 psig. 2 drum boiler/large economizer. Original economizer replaced by Kvaerner in 1995.
Incident Date:	September 29, 2004.
Leak/Incident Loc:	**Economizer** – longitudinal cracks initiated internally. 1) rear bank, lower header- at 97th tube from right sidewall, 11th tube from rear and 2) front bank, lower header- at 62nd tube from right sidewall, 16th tube from rear
Downtime hrs due to leak/total:	Total outage time 53.17 hours
ESP?	None
Classification:	
How discovered:	Walkdown of off-line boiler by daylight Foreman and Engineer discovered 1st leak. 2nd leak discovered on hydro for 1st leak repair.
Leak detection:	Acoustic leak detection system did not detect nor confirm leak
Sequence of events:	Boiler taken off-line for water washing. While boiler cooling, visual inspection of economizer discovered leak in the rear bank. Defect repaired; during hydro, inspection disclosed; leak in the front bank
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Both leaks repaired by grinding out defect and overlaying with weld metal
Root cause:	Cracks showed some indication of corrosion but caused primarily by fatigue
Future prevention:	Continue to evaluate replacing both front and rear banks
Last full inspection:	Last full inspection 3/20/2003. Acid cleaned (HCl) 9/25/2003

SPRING 2005- 2	
Location:	**MeadWestvaco, Charleston, South Carolina**
Unit:	B&W Contract PR-206. Startup 1984.
Size:	4.5 million ppd solids. 691,000-lb/hr steam. Operating at 1450 psig & 880F. Design At 1725 psig. 2 drum boiler/large economizer. Original economizer replaced by Kvaerner in 1995.
Incident Date:	October 30, 2004
Leak/Incident Loc:	**Economizer** – longitudinal cracks initiated internally. 1) rear bank, lower header- at 27th tube from right sidewall, 13th tube from rear 2) rear bank, lower header- at 60nd tube from right sidewall, 8th tube form rear , 3) rear bank, lower header at 75th tube from right sidewall, 7th tube from rear
Downtime hrs due to leak/total:	Total outage time 53.17 hours
ESP?	None
Classification:	
How discovered:	Inspection while bed cooling following shutdown for water washing with sootblowers
Leak detection:	Acoustic leak detection system did not detect nor confirm leak
Sequence of events:	Waterwashing decision prompted by high draft. Economizer inspection before washing revealed three leaks
Bed cooling:	No
Wash adjacent tube:	Two of the leaks caused tube thinning in adjacent header.
Repair procedure:	Headers plugged on 26th and 74th elements due to erosion damage from leaks on adjacent tubes. Leak 2) repaired by weld overlay of defect. Leaks at 1) and 3) – headers were plugged.
Root cause:	Leaks were longitudinal cracks with some indication of corrosion and appeared to be caused by fatigue
Future prevention:	Cut and plug 50% of rear bank headers. Grind and weld overlay welds in remaining headers. Evaluate possibility of feedwater pump cavitation.
Last full inspection:	Last full inspection 3/20/2003. Acid cleaned (HCl) 9/25/2003

ATTACHMENT A – SUMMARY OF RECOVERY BOILER INCIDENTS (Continued)

SPRING 2005- 3	
Location:	**Weyerhaeuser, Johnsonburg, Pennsylvania**
Unit:	Tampella Contract No 90132. Startup 1993.
Size:	2.8 million ppd solids. Steam flow 400,000 lb/hr. Operating at 1250 psig & 850F. Design 1600 psig & 900F. Single drum/large economizer.
Incident Date:	February 6, 2005
Leak/Incident Loc:	**Economizer -** pinhole in butt weld between tube 10 and extruded nozzle on lower header 10 of EC1 (feedwater inlet)
Downtime hrs due to leak/total:	Total downtime 30 hours
ESP?	None
Classification:	
How discovered:	Operator walkdown observed wet ash on conveyor from cold EC bank
Leak detection:	None installed
Sequence of events:	Following determination of wet ash, boiler was shutdown and waterwashed. Leaks then located.
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Defect ground out and weld repaired.
Root cause:	Stress fatigue corrosion of poor shop weld.
Future prevention:	
Last full inspection:	Last inspection May 2004. Acid cleaning 1993

SPRING 2005- 4	
Location:	**Weyerhaeuser, Flint River Operations, Oglethorpe, Georgia**
Unit:	Unit No. 1. B& W Contract PR-198. Startup 1980
Size:	4.8 million ppd solids. 643,000-lb/hr steam flow. Operating at 900 psig & 825F. Design at 1175 psig. 2 drum boiler/large economizer
Incident Date:	January 27, 2005
Leak/Incident Loc:	**Economizer-** ¾ in. long crack in lower header handhole cap seal weld. Handhole in 2nd set of headers from rear, 1st header from left sidewall, 2nd handhole from left sidewall
Downtime hrs due to leak/total:	Total downtime 41 hours
ESP?	No
Classification:	
How discovered:	Activation of high differential pressure alarm for 5th pass of baffled, crossflow economizer.
Leak detection:	Monitors steam/feedwater differential over time & alarms on severity & length of deviation. System did not detect nor confirm leak
Sequence of events:	Alarm sounded for extended time prompting operators to look for a leak. Hoppers were clear and dry. With doors open, an unusual sound in the boiler was detected. Liquor removed from boiler and oil fired. With gas cleared, observation of water spray from crack possible.
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Welding equipment applied to replace seal weld using supplier recommended changes in mill procedure
Root cause:	No obvious root cause for crack in seal weld
Future prevention:	Modified weld procedure for 500F preheat, ensure a full 3/8” seal weld regardless of number of passes, & stopped using tack welds
Last full inspection:	Last inspection October 2004. Caustic boil out in 1994.

ATTACHMENT A – SUMMARY OF RECOVERY BOILER INCIDENTS (Continued)

SPRING 2005 - 5	
Location:	**Western Pulp Ltd, Squamish, British Columbia**
Unit:	CE (Alstom Power) contract CA 84101. Startup 1986.
Size:	4.0 million ppd solids. Steam flow 550,000 lb/hr. Operating at 600 psig annd750F. Design at 800 psig. 2 drum boiler/ large economizer
Incident Date:	December 9, 2004
Leak/Incident Loc:	**Economizer –** ¾ " long perforation on the tube side of the seal weld into the header. Leak in upper header of No. 2 economizer (hot EC), tube 48
Downtime hrs due to leak/total:	Total downtime 35 hours,
ESP?	No
Classification:	
How discovered:	Operator walkdown of unit
Leak detection:	No
Sequence of events:	Operator inspecting EC hopper noticed ash appearance different color than normal. Warning lights were activated to clear building of unnecessary personnel. Shift Engineer located the leak and verified water could not enter furnace.
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Defect ground to prepare a "V" groove welded with full penetration.
Root cause:	Defect in original seal weld.
Future prevention:	.
Last full inspection:	Inspected July 2004

SPRING 2005 - 6	
Location:	**Appleton, Spring Mill, Roaring Springs, Pennsylvania**
Unit:	No. 3 Recovery Boiler. B&W Contract PR-203. Startup 1983.
Size:	811, 200 ppd solids. Steam flow 117,800 lb/hr. Operating at 580 psig & 725F. Design at 725 psig. 2 drum/ large economizer (3 pass, baffled boiler bank).
Incident Date:	September 30, 2004
Leak/Incident Loc:	**Economizer –** 1/16" pinhole or small crack on top of tube to header weld at upper header closest to boiler bank.
Downtime hrs due to leak/total:	Total downtime 28 hours- 37 minutes
ESP?	No
Classification:	
How discovered:	Water droplets on cleaning bar being used for routine cleaning of EC hopper.
Leak detection:	No
Sequence of events:	Boiler was shutdown for repairs.
Bed cooling:	No
Wash adjacent tube:	Leak washed the adjacent tube in EC (tube in same row and above original failed tube.)
Repair procedure:	Removed top & middle tubes in row to access weld failure. Defect ground out and weld repaired. Middle and top tube replaced. Welds MT tested.
Root cause:	Suspicion is vibration stress occurring many years before. A short time after initial startup, seven tube to upper header welds failed due to vibration fatigue.
Future prevention:	Vibration bars installed June 1985. No further leaks until1998.
Last full inspection:	Last inspection May 2004. The report is that EC never chemically cleaned

ATTACHMENT A – SUMMARY OF RECOVERY BOILER INCIDENTS (Continued)

SPRING 2005 - 7	
Location:	**International Paper Co., Texarkana, Texas**
Unit:	B&W Contract PR-186. Startup 1976
Size:	4.55 million ppd solids. Steam Flow 763,000 lb/hr. Operating at 1050 psig & 813F. Design at 1200 psig. Two drum, single pass boiler bank/ large economizer
Incident Date:	December 29, 2004
Leak/Incident Loc:	**Economizer-** crack in tube at seal weld of tube to header. 18th tube from RHSW, 3rd row from front side on rear, top header of primary (hot) section
Downtime hrs due to leak/total:	Total downtime 33 hours
ESP?	No
Classification:	
How discovered:	Operator investigating a tripped rotary ash valve motor found water in a hopper conveyor for boiler bank and primary economizer ash
Leak detection:	No
Sequence of events:	Operator knowing history of leaks concluded that it was not possible for water to enter the furnace. Boiler shutdown in normal manner.
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Plugged tube at headers
Root cause:	To be determined
Future prevention:	Primary (hot) economizer section to be replaced in Fall 2005
Last full inspection:	Last inspection April 2004. Acid cleaned (HCl) in 2004

SPRING 2005 - 8	
Location:	**International Paper, Kaukauna, Wisconsin**
Unit:	No. 8 Recovery Boiler. B7W Contract No. S-9759. Startup 1952.
Size:	750,000 ppd solids. Steam flow 128,000 lb/hr. Operating at 600 psig & 700F. Design at 650 psig. Two-drum, 2 pass boiler bank with integral economizer and tubular air heater. EC supplied 1982 by Lucy Boiler.
Incident Date:	February 27, 2005
Leak/Incident Loc:	**Economizer –** 1/16" pinhole leak to the outside of tube to which manway door is welded. Door at bottom of EC at 6th floor level.
Downtime hrs due to leak/total:	Total downtime 28 hours
ESP?	ESP was initiated.
Classification:	
How discovered:	Operator making rounds noticed water dripping on exterior side of boiler casing at the 5th floor
Leak detection:	No
Sequence of events:	Source of water could not be determined. Decision made to burn out the bed. Source still unidentifiable so hydro test initiated resulting in damp spot on refractory. Removal of casing and insulation in the damp area disclosed pinhole leak about 3/8" away from doorframe attachment weld.
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Defect ground out and pad welded
Root cause:	Appears to be a construction arc strike in a high stress area of the tube
Future prevention:	Study in progress to eliminate of replace the economizer
Last full inspection:	Last inspection October 4, 2004. Acid cleaned boiler October 2002

ATTACHMENT A – SUMMARY OF RECOVERY BOILER INCIDENTS (Continued)

SPRING 2005 - 9	
Location:	**Weyerhaeuser, Hawesville, Kentucky**
Unit:	No. 4 Recovery Boiler. Ahlstrom (Andritz) Contract No. 400019. Startup 1997..
Size:	2.7 million ppd solids. Steam flow 422,600 lb/hr. Operation at 1250 psig & 850F. Design at 1550 psig. Single drum boiler/large economizer
Incident Date:	February 26, 2005
Leak/Incident Loc:	**Economizer -** ~ ¼" long circumferential crack in a straight run of 2" OD feeder tube to the No. 2 (hot) economizer, about 1 inch from the main distribution header. Feeder is 2nd from the east sidewall (the 1st 45 degree bend feeder from the east wall). (There was a leak previously on the opposite sidewall in the same location.)
Downtime hrs due to leak/total:	Total downtime 27.2 hours.
ESP?	No
Classification:	
How discovered:	Recovery helper on a boiler walkdown found water running out of the ash hopper
Leak detection:	None installed
Sequence of events:	Leak location confirmed to be well removed from furnace, consequently boiler operated until that night when fuel was removed and boiler secured for entry the next morning for repair
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Crack ground out and welded. Inspected casing seal on distribution header to confirm clearance
Root cause:	
Future prevention:	Investigation of expansion and header support issues. Header pipe hangers and internal header supports to be inspected nest outage. Seal area to be opened, cleaned and fully inspected on next outage.
Last full inspection:	Last inspection May 2003. Acid cleaned (HCl) September 1997

SPRING 2005 - 10	
Location:	**International Paper, Franklin, Virginia**
Unit:	No. 5 Recovery Boiler. ABB-CE Contract No. 21868. Startup 19700. Component with leak installed by ABB-CE in 1993
Size:	1.75 million ppd solids. Steam flow 274,000 lb/he. Operation at 600 psig & 750F. design at 700 psig. Two drum boiler/ DCE
Incident Date:	January 27, 2005
Leak/Incident Loc:	**Economizer –** leak at a ½" x 4" gouge in the tube due to a previous repair on an adjacent tube. Leak in row 6, tube 2, 6" above the lower header**.**
Downtime hrs due to leak/total:	Total downtime 174 hours
ESP?	No
Classification:	
How discovered:	Outside operator performing inspection rounds noticed water leaking from the lower economizer casing..
Leak detection:	Leak detection system in operation neither detected nor confirmed the leak.
Sequence of events:	The boiler was on-line and firing auxiliary fuel oil. Liquor had been removed from the boiler several hours earlier because of low inventory. Outside operator making rounds noticed the water.
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Tube plugged external to upper and lower header. Tube left in place.
Root cause:	Failures due to a gouge in the tube from previous shutdown in August 2000 to repair tube 1 in same row.
Future prevention:	Review code welding procedures to insure proper QA/QC procedures
Last full inspection:	Last inspection' March 2005. Acid cleaning (HCl) in 1999.

ATTACHMENT A – SUMMARY OF RECOVERY BOILER INCIDENTS (Continued)

SPRING 2005 - 11	
Location:	**MeadWestvaco, Mahrt Mill, Phenix City, Alabama**
Unit:	No. 2 Recovery Boiler. Tampella Contract No. 337. Startup1990.
Size:	3.5 million ppd solids. Steam flow 561,500 lb/hr. Operation at 890 psig & 790F. Design at 1100 psig. Single drum boiler/ large economizer
Incident Date:	May 24, 2004
Leak/Incident Loc:	**Economizer –** Rear (cold) economizer bank. Pinhole leak approx 2" from lower header tube-to-header weld in 77th element from left wall, tube 8 (counting top to bottom at hdr) next to sootblower cavity
Downtime hrs due to leak/total:	Total downtime 25 hours
ESP?	No
Classification:	
How discovered:	Operator observed moisture in ash conveyor during walkdown
Leak detection:	None installed
Sequence of events:	Operator observed moisture in the conveyor and shift supervisor and technical assistant were called to the boiler. Standing water observed in bottom of conveyor. Liquor removed from furnace and bed burned out. Boiler shutdown 8 hours after first observation of water.
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Hole ground out, penetrant tested, repaired and again penetrant tested
Root cause:	
Future prevention:	Removing a row of tubes in economizer to increase cavity width so can inspect fin terminations and repair any 'clips' that may have broken welds.
Last full inspection:	Last inspection September 2003. Chemical cleaned with inhibited HCl in 1990

SPRING 2005 - 12	
Location:	**MeadWestvaco, Mahrt Mill, Phenix City, Alabama**
Unit:	No. 2 Recovery Boiler. Tampella Contract No. 337. Startup1990.
Size:	3.5 million ppd solids. Steam flow 561,500 lb/hr. Operation at 890 psig & 790F. Design at 1100 psig. Single drum boiler/ large economizer
Incident Date:	October 4, 2004
Leak/Incident Loc:	**Economizer –** crack in the toe of the tube to lower header weld on tube 7, element 77 in the cold economizer (see preceding Incident No. 11). Mill does not believe there was any washing of the tube from tube 8 failure in Incident No. 11
Downtime hrs due to leak/total:	Total downtime 23 hours
ESP?	No
Classification:	
How discovered:	Supervisor observed water in ash conveyor during walkdown
Leak detection:	In-house mass balance leak detection system in operation neither detected nor confirmed leak as it was to small
Sequence of events:	After confirming the presence of a leak, the bed was burned down and the boiler than shutdown.
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Crack ground out, penetrant tested, weld repaired and penetrant tested again
Root cause:	
Future prevention:	Sootblowing frequency and blowing pressure reduced in the economizer. Pressure reduced from 300 psig to 220 psig. Removing a row of tubes in economizer to increase cavity width so can inspect fin termination and repair any 'clips' that may have broken welds.
Last full inspection:	Last inspection September 2003. Chemical cleaned with inhibited HCl in 1990

ATTACHMENT A – SUMMARY OF RECOVERY BOILER INCIDENTS (Continued)

SPRING 2005 - 13	
Location:	**International Paper, Androscoggin (Jay), Maine**
Unit:	CE Contract No. 0193 Startup 1965. CE supplied new economizer in 1984
Size:	1.8 million ppd solids. Steam flow 300,000 lb/hr. Operation at 900 psig and 815F. 2 drum boiler/ large economizer
Incident Date:	October 22, 2004
Leak/Incident Loc:	**Economizer –** pinhole on top of tube located directly under a sootblower. 2nd leak found during repair outage
Downtime hrs due to leak/total:	Total downtime 41 hr-10 min
ESP?	No
Classification:	
How discovered:	Feedwater/steam differential alarm sounded in the control room
Leak detection:	None installed
Sequence of events:	Alarm sounded and operator went to inspect found water around seal of bottom door of economizer cavity. Liquor removed from boiler. Aux fuel removed ~ 6 hrs later. Boiler cooled for inspection
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Tube plugged per policy. Thickness testing of adjacent tubes completed
Root cause:	Erosion. Leak caused by condensate dripping from a sootblower located directly above the leak
Future prevention:	Continue sootblower PM program. Add inspection of sootblower condensate drains to operator daily rounds.
Last full inspection:	Last inspection April 2004

SPRING 2005 - 14	
Location:	**Weyerhaeuser, Columbus Mill, Columbus, Mississippi**
Unit:	B&W Contract PR-212. Startup 1990.
Size:	5.85 million ppd solids. Steam flow 900,300 lb/hr. Operation at 1700 psig & 925F. Design at 1825 psig. Single drum boiler/ large economizer.
Incident Date:	January 3, 2005
Leak/Incident Loc:	**Superheater (secondary) –** 1st tube from right hand sidewall at the 3rd sootblower cavity & at a sootblower elevation
Downtime hrs due to leak/total:	Total downtime 98.2 hours
ESP?	No
Classification:	
How discovered:	Triple 5 Acoustic Leak Detection Sys provided initial detection of leak with alert of elevated decibel levels on the right wall. Hercules Leaktrac Mass Balance never showed any type leak.
Leak detection:	In service
Sequence of events:	Dec. 27-email from Triple 5 that sensor 26 was showing slow increase in decibel level. No abnormal noise heard on walkdowns. Jan. 3 – Walkdown with blowers off; no abnormal noise. Additional investigation at sensor 26 disclosed an unusual noise. Triple 5 contd report of high noise level with blowers off. There was no other indication of a leak. Noise contd with various isolation of steam sources. Flat bar insertion supported leak near wall. Boiler normal shutdown.
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	SH tube sectioned and replaced
Root cause:	Sootblower condensate impingement on high temperature tube resulted in thermal fatigue cracking. Metallurgical analyses suggests thermal fatigue likely occurred over a long time period
Future prevention:	Sootblower trip pins moved so blower opens between wall and first SH tube instead of at the tube. Steam trap bypass cracked open to prevent condensate accumulation if trap faulty. Also investigating what has changed to now give a problem where there has not been one before.
Last full inspection:	Last inspection January 3, 2005. Cleaned with HCl acid in 1998.

ATTACHMENT A – SUMMARY OF RECOVERY BOILER INCIDENTS (Continued)

SPRING 2005 - 15	
Location:	**International Paper, Prattville, Alabama**
Unit:	Local Unit ID RB1. CE Contract No. 1965. Startup 1967
Size:	2.1 million ppd solids. Steam flow 320,500 lb/hr. Operating at 850 psig and 830F, Design at 900 psig. Two drum boiler with small economizer and DCE.
Incident Date:	February 10, 2005
Leak/Incident Loc:	**Superheater -** 1" x 3" thin lipped rupture of intermediate SH pendant No. 22 from the left wall (Pendant is next to right wall. Rupture in front tube of bank at outside radius of lower bend just above the hockey stick**.**
Downtime hrs due to leak/total:	Total downtime liquor to liquor 50.07 hours
ESP?	ESP initiated'
Classification:	
How discovered:	Boiler tender heard the tube rupture and control room operator got indications in the control room
Leak detection:	Hercules Leak Trac system (combined mass balance and chemical balance) installed in 2003 did not initially provide indication but did confirm the leak
Sequence of events:	At ~ 2055 hrs, boiler tender on 3rd floor heard a loud noise and furnace darkened. Tender and shift supervisor had control room operator turn off sootblowers and proceeded to walkdown unit. At 6th level, they heard a loud blowing noise and ordered an ESP at 2100 hours. Operator at same time noticed indications of leak and Leak Trac started to alarm.. There had been no indicator of a leak prior to noise of rupture.
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Replaced bend. Additional bend found to be thinned also replaced.
Root cause:	Thinning of tube outside bend due to erosion/corrosion. SH in service 21 years. Area that failed not normally UT'd.
Future prevention:	Area will be added for future UT scope of testing
Last full inspection:	Last inspection October 2004. Acid cleaned September 2001

SPRING 2005 - 16	
Location:	**International Paper, Augusta, Georgia**
Unit:	No. 2 Recovery Boiler. B&W Contract PR-89. Startup 1965.
Size:	1.79 million ppd solids (design at 1.2 million). Steam flow 185,000 lb/hr. Operation at 850 psig & 900F. Design at 875 psig. Two drum, 2 pass boiler bank with integral economizer/ DCE
Incident Date:	February 2, 2005
Leak/Incident Loc:	**Superheater (Secondary) –** rupture of SH loop that is immediately upstream of SH outlet. Loop is inner loop of four. Rupture area on side of loop replaced in 1995 shutdown, just above cut-line.
Downtime hrs due to leak/total:	Total downtime 47 hours
ESP?	No
Classification:	
How discovered:	Noise of leak heard on walkdown. Steam flow loss noted in control room.
Leak detection:	No
Sequence of events:	Foreman noted steam flow to have decreased ~ 90,000 lb/hr (about 50%) and there was furnace puffing at the liquor gun doors. Went to investigate SH in area where leaks had occurred. Noise was herd at the 6th floor level coming from secondary SH section. Liquor was diverted and access door opened to confirm leak location. With positive identification of location, bed was burned down.
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Replaced loop with Dutchman on both ends
Root cause:	Thinning due to corrosion/erosion related to high temperature and high carryover rate.
Future prevention:	NDT above cut lines during 2005 shutdown
Last full inspection:	Last inspection May 2004. Chemically cleaned in April 1999.

ATTACHMENT A – SUMMARY OF RECOVERY BOILER INCIDENTS (Continued)

SPRING 2005 - 17	
Location:	**International Paper, Prattville, Alabama**
Unit:	No. 2 recovery boiler. Alstom Contract No. 20278. Startup 1980.
Size:	3.2 million ppd solids. Steam flow 506,000 lb/hr. Operation at 1500 psig & 900F. Design at 1740 psig. Two drum boiler/ large economizer
Incident Date:	January 10, 2005
Leak/Incident Loc:	**Superheater -** ~ ½" hole in thinned area of high temperature steam outlet tube in 6th intermediate SH platen from right to left, 9th tube front to rear, & ~ 15' from bottom of platen
Downtime hrs due to leak/total:	Out due to leak- 81.05 hrs. Additional 19.50 hrs to replace drum steam drum manhead gasket. Total outage – 100.55 hrs
ESP?	No
Classification:	
How discovered:	During hydro test following shutdown and repair of a smelt leak at the floor to sidewall seal
Leak detection:	Hercules Mass & Chemical Balance system installed in 2003 neither detected nor confirmed leak
Sequence of events:	Boiler taken out of service to repair a seal between floor and sidewall. After seal repair completed, hydrostatic pressure test revealed a SH leak.
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Section of SH tube was replaced
Root cause:	SH leak result of corrosion caused by high tube metal temperature and liquid phase chloride attack
Future prevention:	Final resolution of SH pending. Drum gasket material addressed via revised purchasing program
Last full inspection:	Last inspection February 2004. Acid cleaned with HCl in 2002

SPRING 2005- 18	
Location:	**Weyerhaeuser, Port Wentworth, Georgia**
Unit:	Site Unit ID: 24370. B&W Contract PR-190. Startup 1979.
Size:	5.1 million ppd solids. Steam flow 699,000 lb/hr. Operation at 600 psig & 750F. Design at 1700 psig. Two drum boiler/ large economizer
Incident Date:	September 5, 2004
Leak/Incident Loc:	**Superheater –** Primary SH, Platen 5, tube 6 at middle D-link attachment weld. First SH leak since reactivation in 2000.
Downtime hrs due to leak/total:	Boiler forced outage was close to scheduled mill annual outage for September 11 and boiler not back on liquor until 16th
ESP?	No
Classification:	
How discovered:	Operator heard noise during walkdown
Leak detection:	None installed
Sequence of events:	Technician making final shift walkdown was listening for leaks with sootblowers off. Opened sidewall inspection door at middle row of blowers, heard a sound and summoned Operator. Sootblowers valved out and noise still present. There was no indication of a leak in the control room. More doors were opened and noise could only be heard from two. There were no wet spots. Considering the history of D-link failures, the Department Manager made the decision to remove liquor and burn out the bed. A short time after liquor removed, power boiler tripped due to ID Fan failure, which tripped the recovery boiler. Electrical limitations prevented a feedwater pump start. Pressure dropped to 225 psig and decision made to not restart.
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Installed a 4 ft. Dutchman. Welded, x-rayed and hydro tested
Root cause:	Original construction used an Inconel weld procedure for link attachment to tubes. Weld is stronger than tube metal causing metal to pull out of several tubes over past couple of years.
Future prevention:	Four year program of replacing D-link ties with split-ring castings, concentrating first on center elevation of links
Last full inspection:	Last inspected September 2001. Acid cleaned in 1999,

ATTACHMENT A – SUMMARY OF RECOVERY BOILER INCIDENTS (Continued)

Spring 2005 - 19	
Location:	**SAPPI, Skowhegan, Maine**
Unit:	No. 1 Recovery Boiler. CE Contract No. 21774. Startup 1975
Size:	5.0 million ppd solids. Steam flow 600,000 lb/hr. Operation at 1000 psig & 875F. Design at 1050 psig. Two drum boiler/ large economizer
Incident Date:	October 11, 2004
Leak/Incident Loc:	**Superheater –** short term rupture of outside tube in front loop of radiant SH pendant No. 6 from east sidewall 86' above floor
Downtime hrs due to leak/total:	Total downtime 7 days and 7 hours.
ESP?	ESP initiated
Classification:	
How discovered:	Operator heard a loud noise during rounds. There had been acoustic leak detection system trending alarms earlier
Leak detection:	Triple 5 Acoustic System installed in 1992 was in operation and provided initial indication of leak
Sequence of events:	Boiler coming out of annual maintenance shutdown was hydro tested and a SH tube leak revealed. Decision to plug instead of installing Dutchman favored former because of material availability. SH element was plugged-later learned at the wrong place. Also repaired a water wall hdr handhole leak. Startup hampered by a number of system and component problems requiring ~ 54 hrs after 2nd hydro to reach load on liquor. About 6 hrs after start of liquor firing, operators heard loud noise and ESP'd when apparent leak source could not be verified. 24 hours later, walked down boiler and located the apparent source to be a rupture of the SH element that had been plugged. Contacted Alstom and learned plug in wrong place and that tube had been fully pressurized with no flow. Plugged SH element correctly. On hydro, discovered 1340 gen bank tubes in steam drum & 70 in mud drum showing signs of moisture. Drained boiler, removed drum internals & started touch=up rolling. Alstom recommended the two SH elements be replaced. Work completed hydro tested and went on-line.
Bed cooling:	No
Wash adjacent tube:	Washed and thinned the tube in the 2nd loop but it did not leak
Repair procedure:	Replaced ruptured and thinned SH loops. Large number of boiler bank tubes had loosened and were weeping: requiring very light rolling ("bumping")
Root cause:	Incorrect location of plugs in a SH loop during outage preceding incident when hydro revealed a leak in the same loop
Future prevention:	Completely trace steam path when considering plugs for leak repair.
Last full inspection:	Last inspection during annual outage October 2004. Acid cleaned in 1992

ATTACHMENT A – SUMMARY OF RECOVERY BOILER INCIDENTS (Continued)

SPRING 2005 - 20	
Location:	**International Paper, Ticonderoga, New York**
Unit:	Recovery boiler No. 1. B&W Contract PR-131. Startup 1969.
Size:	2.01 million ppd solids. Steam flow 300,000 lb/hr. Operating at 875 psig & 825F. Design at 975 psig. Two drum boiler/ large economizer
Incident Date:	January 28, 2005
Leak/Incident Loc:	**Superheater and Upper Furnace Riser Tube –** failure of floor to sidewall seal resulting in smelt leak. After forced ouage, found a 1.5" crack at backspace tie link on SH tube No. 40 (counting left to right) located at mid-level sootblower at SH gas outlet.. Riser tube "needle" hole size leak in butt weld in 2" OD tube between right rear sidewall header and steam drum, 39" from drum.
Downtime hrs due to leak/total:	Total downtime 104.75 hours
ESP?	No
Classification:	
How discovered:	Leaks found during hydrostatic test after repair of floor tube seal that resulted in smelt flowing to building grade floor
Leak detection:	No
Sequence of events:	Increasing flow of smelt to building floor could not be controlled. Bed burned out with a controlled shutdown. Seal repaired and boiler hydro tested. Leak discovered at SH tie link and repaired. Hydro test found water leaking through wall enclosure in front half of boiler bank wall. "Needle sized wormhole" leak determined to be in butt weld in riser tube at start-stop point of weld beads.
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Replaced 54 inches of 2.5" OD SH tube. No description of repair of riser tube
Root cause:	Seal failure attributed to size inadequately cooled by tubes. SH failure attributed to thermal cycling of tube due to condensate impingement during sootblower operation. Poor weld quality resulted in the riser weld failure; weld believed to be from original 1969 construction.
Future prevention:	Inspection and repair as necessary
Last full inspection:	Last inspection June 2004. Acid cleaned 1999..

SPRING 2005 - 21	
Location:	**International Paper, Cantonment, Florida**
Unit:	No. 1 Recovery Boiler. B&W Contract PR-171-1. Startup 1975.
Size:	2.9 million ppd solids. Steam flow 455,000 lb/hr. Operation at 850 psig & 825F. Design at 1000 psig. Two drum boiler/ large economizer
Incident Date:	May 13, 2004
Leak/Incident Loc:	**Boiler Bank –** crack at vibration bar support lug attachment weld on tube in 22nd row counting from rear & 66th tube from LHSW
Downtime hrs due to leak/total:	Total downtime 23 hours
ESP?	No
Classification:	
How discovered:	Operators walking down the unit during a chill and blow procedure noticed the leak
Leak detection:	Mass Balance system configured in DCS on I/A in 1998 neither detected nor confirmed leak
Sequence of events:	Boiler being cleaned. There was no liquor or aux fuel being fired and steam flow zero. No smelt flow. (Pressure not stated) When leak detected, boiler taken completely off line without ESP.
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Crack ground out and welded using GTAW procedures. Lug relocated.
Root cause:	Crack propagated through the tube wall
Future prevention:	Checked other similar welds in same area sootblower pressures above and below failure
Last full inspection:	Last inspection December 2004. Chemically cleaned during outage using inhibited 3% citric acid w/ ammonium bifluoride followed by ammonium

ATTACHMENT A – SUMMARY OF RECOVERY BOILER INCIDENTS (Continued)

SPRING 2005 - 22	
Location:	**Weyerhaeuser, Longview, Washington**
Unit:	No. 10 Recovery Boiler. B&W Contract PR-165. Startup 1974. B&W upgrade in 2002
Size:	6.1 million ppd solids. Steam flow 808,000 lb/hr. Operation at 670 psig & 700F. Design at 900 psig. Two drum, crossflow boiler bank/large economizer
Incident Date:	October 8, 2004
Leak/Incident Loc:	**Boiler Bank –** 6" long x 4" wide fish-mouth rupture of downcomer tube in last row (bank gas outlet) of boiler bank at a point ~ 12" from steam drum. Tube is #28 from LH sidewall. Hydro following SH repair Hydro following repair revealed a 1/32" pinhole in a roof tube
Downtime hrs due to leak/total:	Total downtime 111 hours
ESP?	ESP was initiated.
Classification:	
How discovered:	Operator had control system indication of high furnace pressure, high stack opacity, low drum level & high steam/feedwater differential. Area mechanic reported smoke/steam in the boiler room & water running down outside of mud drum from floor above.
Leak detection:	Triple 5 Structure Borne Acoustic Monitoring & Hercules Chemical Balance Leak Trac Systems in operation neither detected initially nor confirmed leak
Sequence of events:	Operator responded to indications by intent to initiate ESP, but pushed the Master Fuel Trip button. Operator then closed feedwater valve. After 4 minutes, operator recovered to initiate ESP.
Bed cooling:	Southland Fire injected$NaHCO_3$ powder over 48 hrs starting 14 hrs after ESP. Time savings credited to cooling – 24 to 48 hours. Bed cooled to 900F; confirmed with TC's at 4 locations.
Wash adjacent tube:	No
Repair procedure:	Boiler tube plugged in both drums & sectioned out ; roof tube weld repaired & later sectioned 03/20/05
Root cause:	ID thinning due to caustic corrosion generated due to steam blanketing of horizontal tube
Future prevention:	Tube thickness testing Dec. 2004.
Last full inspection:	Last inspection March 2004. Chemically cleaned March 2003 using HCl acid with urea

SPRING 2005 - 23	
Location:	**International Paper, Pineville, Louisiana**
Unit:	Recovery Boiler No. 1. CE Contract No. 09466. Startup 1968
Size:	2.5 million ppd solids. Steam flow 414,000 lb/hr. Operation at 875 psig & 825F. Design at 1000 psig. 2 drum boiler/ DCE
Incident Date:	August 10, 2004
Leak/Incident Loc:	**Upper Furnace –** leak ~ ½" long crack at toe of weld on a 2" x 4" window insert that had been made many years ago on the outside of right furnace wall at elevation 80' above floor.
Downtime hrs due to leak/total:	Total downtime 21 hours – 35 min.
ESP?	No
Classification:	
How discovered:	Operator making routine walkdown discovered steam blowing through the insulation and lagging
Leak detection:	None installed
Sequence of events:	Fuel removed from furnace for a monthly outage. Operator observed steam-blowing approx. 80 min. later. Leak was external and shutdown continued
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Tube thickness in area was determined as 0.165" minimum. Crack then ground out and pad welded using GTAW welding process, then PT'd
Root cause:	Faulty weld due to lack of penetration in installing the window insert
Future prevention:	Window inserts in tubes are not as acceptable IP practice. Tube section to be removed during May 2005 outage and a Dutchman installed. Attempt will be made to identify other window inserts.
Last full inspection:	Last inspection April 2004. Acid cleaned 2001.

ATTACHMENT A – SUMMARY OF RECOVERY BOILER INCIDENTS (Continued)

SPRING 2005 - 24	
Location:	**International Paper, Franklin, Virginia**
Unit:	No. 5 Recovery Boiler. ABB-CE Contract No. 21868. Startup 19700. Component with leak installed by ABB-CE in 1993
Size:	1.75 million ppd solids. Steam flow 274,000 lb/he. Operation at 600 psig & 750F. Design at 700 psig. Two drum boiler/ DCE
Incident Date:	February 6, 2005
Leak/Incident Loc:	**Upper Furnace–** pinhole leak at buckstay attachment on north side of boiler below No. 3 and No. 25 sootblowers. After repair and upon hydro, another leak was discovered in tube 144 on lower bend of nose arch at the buckstay attachment against the cold air space of the arch
Downtime hrs due to leak/total:	Total downtime 61 hours
ESP?	No
Classification:	
How discovered:	Outside operator performing inspection rounds noticed water leaking from the north sidewall casing..
Leak detection:	Internally developed leak detection system in operation neither detected nor confirmed the leak.
Sequence of events:	The boiler was on-line and firing liquor. Outside operator making rounds noticed the water. Controlled boiler shutdown immediately performed.
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	1) Wall tube repaired by grinding out the defect and installing a 1/2“ x ‘1/2” pad weld. 2) Damaged section nose tube removed and dutchman installed.
Root cause:	
Future prevention:	Reduce cycling the boiler to improved reliability. Nose arch section to be replaced in 2006; also superheater and screen tubes
Last full inspection:	Last inspection’ March 2004. Acid cleaning (HCl) in 1999.

SPRING 2005 - 25	
Location:	**Georgia Pacific West, Inc., Toledo, Oregon**
Unit:	No. 1 Recovery Boiler. CE Contract No. 18543. Startup 1957.
Size:	1.05 million ppd solids. Steam flow 144,500 lb/hr. Operation at 370 psig & 700F. Design at 700 psig. 2 drum boiler / DCE
Incident Date:	September 18, 2004
Leak/Incident Loc:	**Upper Furnace -** ½” crack in the heel of a weld directly above the end of a fin (flat) stud that is the upper end of the flat studded rear wall where tubes split to form a 2 row screen in front of the boiler bank. 4th tube from right to left.
Downtime hrs due to leak/total:	Out of operation due to ESP-10 hrs. Total downtime- 38 hours.
ESP?	ESP initiated.
Classification:	
How discovered:	Leak was heard, and subsequently observed by an operator during routine walkdown
Leak detection:	Alert Systems Recovery Boiler Advisor in operation neither detected not confirmed leak
Sequence of events:	Operator walking down boiler heard an unusual sound and called for a 2nd operator to assist in finding the leak. After 30 minutes without success, boiler was tripped. Water observed flowing down ash hopper wall and operator initiated ESP 42 minutes after 1st hearing noise. Adjacent RB also shutdown.
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Crack ground out and tube wall welded back.
Root cause:	Tube thought to be mechanically stressed
Future prevention:	Tube will be (was) sectioned out and replaced at November 2004 outage
Last full inspection:	Last inspection November 2003. Chemically cleaned November 1996

ATTACHMENT A – SUMMARY OF RECOVERY BOILER INCIDENTS (Continued)

SPRING 2005 - 26	
Location:	**Wausau Paper, Mosinee, WI**
Unit:	B&W Contract PR-175. Startup 1976.
Size:	900,000 ppd solids. Steam flow 150,600 lb/hr. Operation at 600 psig & 750F. Design at 750 psig. Two drum boiler/ large economizer.
Incident Date:	December 30, 2004
Leak/Incident Loc:	**Upper Furnace –** leaking upper sidewall header handhole cap. All header handholes use gaskets
Downtime hrs due to leak/total:	Total downtime 94 hours
ESP?	ESP was initiated
Classification:	
How discovered:	Recovery utility person noticed some muddy looking water on floor at 4th level
Leak detection:	No
Sequence of events:	Water source traced to lagging adjacent to a 7th floor manway. As the area was membrane furnace wall, decided to remove liquor guns & burn out bed. Building closed off to entry except for people investigating. Superintendent arrived 65 min later. Water found streaming from lagging at the bottom of the penthouse. Because penthouse floor is a refractory seal that might not keep water out of the furnace, boiler was ESP'd.
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Replaced gasket
Root cause:	Handhole gasket deteriorated. This handhole is seldom used as inspection is through a handhole on other end of header
Future prevention:	Replace handhole with a weld-in handhole. Check other handholes, some of which are seldom used
Last full inspection:	Last inspection June 2004. Chemically cleaned in 1986

SPRING 2005 - 27	
Location:	**Kimberly Clark Nova Scotia, New Glasgow, Nova Scotia**
Unit:	B&W Contract. Startup 1989. Component with leak supplied by B&W 1986.
Size:	3.3 million ppd solids. Steam flow 430,000 lb/hr. Operation at 900 psig & 850F. Design at 1050 psig. 2 drum boiler / DCE.
Incident Date:	August 28, 2004
Leak/Incident Loc:	**Upper Furnace –** 1/8" stress crack in weld at membrane line at top end of upper slope of the bullnose arch where the arch ends and the rear wall are separated to allow the gas to pass
Downtime hrs due to leak/total:	Total downtime 100 hours
ESP?	No
Classification:	
How discovered:	Spoutman doing routine checks including steam-outs at ash hoppers on 5th floor observed a suspected steam leak
Leak detection:	No
Sequence of events:	Sootblowers isolated for determining source of steam. Liquor off and boiler cooling. Noise can be heard. After cooling, water observed in ash hopper. Boiler pressurized at 350psig and leak located.
Bed cooling:	No
Wash adjacent tube:	Leak caused thinning of adjacent tube
Repair procedure:	Two sections of tube replaced.
Root cause:	Stress on the weld of membrane to tubes
Future prevention:	
Last full inspection:	Inspection at 2003 outage. Chemically cleaned in 1999.

ATTACHMENT A – SUMMARY OF RECOVERY BOILER INCIDENTS (Continued)

SPRING 2005 - 28	
Location:	**Longview Fibre Co., Longview, Washington**
Unit:	No. 18 Recovery boiler. CE Contract No. 2964.. Startup 1965. CE/ABB supplied component with leak in 1994.
Size:	2.1 million ppd solids. Steam flow367.000 lb/hr. Operation at 850 psig & 750F. Design at 975 psig. 2 drum boiler/ DCE
Incident Date:	October 28, 2004
Leak/Incident Loc:	**Upper Furnace –** 1" long longitudinal crack in sidewall tube at termination of a membrane weld inside of nose arch. Crack is along toe of weld. Tube with leak bends and bifurcates immediately above the membrane termination.
Downtime hrs due to leak/total:	Total downtime 118 hours
ESP?	ESP initiated
Classification:	
How discovered:	Fireman Helper observed steam coming from the lagging on upper slope of nose arch
Leak detection:	Hercules Leak Track combined Mass Balance & Chemical Balance system installed 2004 was in operation did not detect nor confirm the leak
Sequence of events:	No evidence of a problem on instrumentation. Fireman went to investigate and requested Superintendent. The area has membrane wall, however, concern that there is no sidewall to arch seal at this location led to decision to ESP.
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	RT found 2nd internal, longitudinal crack on cold side crown of tube. Tube sectioned and replaced, & membrane cut back. Similar crack found on opposite side of the boiler in same tube was removed with light grinding.
Root cause:	Thermal stress at termination of membrane between a straight tube and a bent tube
Future prevention:	Inspected both sides of furnace. Membrane cut back as should have been during construction.
Last full inspection:	Last inspection May 2004. Cleaned in 1997-phosphate boilout, then HCl, citric & phosphate acid

SPRING 2005 - 29	
Location:	**Stora Enso North America, Wisconsin Rapids, Wisconsin**
Unit:	No. 1 Recovery Unit. CE Contract No. CE-1166. Startup 1968.
Size:	1.5 million ppd solids. Steam flow 215,000 lb/hr. Operation at 1250 psig & 900F. Design at 1450 psig. 2 drum boiler / DCE.
Incident Date:	September 10, 2004
Leak/Incident Loc:	**Lower Furnace –** Leak 1-~ 1/8" pinhole through attachment weld at scalloped bar 2'-10" above chromized tube weld line. At left wall, 2nd tube back from front wall. Leak 2- ~ 1/16" pinhole at a butt weld ~ 19' above 1st leak. At right wall, 4.5' from rear wall
Downtime hrs due to leak/total:	Total downtime 49.5 hours
ESP?	ESP was initiated
Classification:	
How discovered:	Discovered by Operator during visual inspection rounds
Leak detection:	No
Sequence of events:	Operator during rounds found water on buckstays and dripping from lagging and insulation on left wall. Determined water coming from a water wall leak. Boiler was ESP'd. 2nd leak found during hydro of 1st leak repairs.
Bed cooling:	No
Wash adjacent tube:	2nd leak had begun washing out the adjacent tube.
Repair procedure:	Weld defects ground out and weld repaired. Tube that was washed repaired with weld buildup
Root cause:	1st leak-a weld defect or fatigue due to years of cycling. 2nd leak-weld defect, ie, porosity or inadequate penetration.
Future prevention:	Post-ESP critique determined water should not be put back into boiler until the bed is verified safe.
Last full inspection:	Last inspection June 2004. Acid cleaned July 1992 – ammonia/HCl acid/citric acid

ATTACHMENT A – SUMMARY OF RECOVERY BOILER INCIDENTS (Continued)

SPRING 2005 - 30	
Location:	**Smurfit-Stone, La Tuque, Quebec**
Unit:	Unit CRU-3. CE Contract CA 55102. Startup 1955.
Size:	900,000 ppd solids. Steam flow 140,000 lb/her. Operation at 275 psig & 500F. Design at 300 psig. Three drum boiler / DCE
Incident Date:	January 6, 2005
Leak/Incident Loc:	**Lower Furnace –** crack at same location as a crack from previous shutdown that was repaired by grinding smooth to remove crack but not welded. Tube #25 of 34 on left sidewall, 4 " below center of primary air ports at right hand side membrane location
Downtime hrs due to leak/total:	Downtime due to ESP – 18.5 hours. Total downtime – 36 days (forced outage extended into annual outage)
ESP?	ESP was initiated.
Classification:	
How discovered:	Tankman noticed slight amount of steam escaping from outer casing seam between aux fuel burner box and primary air windbox. Closer examination noted dripping water
Leak detection:	No
Sequence of events:	ESP'd CRU #3, after shutting down adjacent unit CRU#4, 30 minutes after ESP decision made and 60 minutes after water discovered. Started 16 hour waiting period
Bed cooling:	No
Wash adjacent tube:	Washed adjacent tube thinning the wall
Repair procedure:	Tube cut out and replaced. The thinned tube was welded to original 0.200" thickness. New membrane installed.
Root cause:	Repair procedure on previous outage
Future prevention:	
Last full inspection:	Last inspection February 2004. Chemical cleaning – unknown

ATTACHMENT A – SUMMARY OF RECOVERY BOILER INCIDENTS (Continued)

SPRING 2005 - 31	
Location:	**Tembec USA, llc, St. Francisville, Louisiana**
Unit:	Recovery Boiler No. 1 (RB1). B&W Contract PR-85. Startup 1965. B&W installed component with leak in 2001
Size:	3.0 million ppd solids. Steam flow 481,000 lb/hr. Operation at 600 psig and 750F. Design at 675 psig. Two drum boiler / large economizer..
Incident Date:	September 28, 2004
Leak/Incident Loc:	**Lower Furnace –** hole in right sidewall tube 24 at secondary airport level ~ 10 ½' above floor.
Downtime hrs due to leak/total:	Downtime due to leak – 66 hrs. Total downtime 69 hrs
ESP?	ESP initiated
Classification:	
How discovered:	Leak visually observed through gun port
Leak detection:	In-house mass balance detection system was in operation but neither detected nor confirmed leak
Sequence of events:	Bed being burned out in preparation for water washing. Liquor guns pulled and bed burnout started at 0700 hrs; scheduled 5 hours for burn out. At 1045, bed 85-90% out. Personnel looking through liquor gun ports to check status observed water spraying into the furnace. Spray projecting approx half width of furnace, but appeared to vaporize before reaching the floor. Several personnel observed leak. Superintendent assessed risk as minimal and ordered maintenance foreman, contractor and assistants to shutdown jobs and clear area. Within 5 min., some 30 people were cleared from area. At 1052, manually started evacuation siren and lights, completed head count, radioed maintenance to assure jobs cleared. At 1055, ESP activated. At 1118. Superintendent inspected leak area through gun port. Furnace floor dry, no visible water other than dampness around leak area and hissing of air through leak. At 1125, boiler declared safe.
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Sectioned damaged tube and replaced section. X-ray of butt welds. Hydro. Visual inspection of area and UT examination of tubes both sides of damaged tube. Boroscope of damaged tube revealed surface clean to 20' above and down to wall header
Root cause:	Localized area of severe fireside corrosion thinning with tube internally having a thick oxide deposit at failure of primarily iron, copper and sodium. Stud wastage along entire length of sample. Numerous circumferential cracks and grooves on external surface in immediate vicinity appeared characteristic of corrosion fatigue. Microstructural analysis showed initial stage of long term overheating but considered minor and not to have contributed to failure. No evidence of significant internal corrosion nor internal cracks. Grooves and general wastage believed to have resulted from flowing smelt
Future prevention:	
Last full inspection:	Last inspection April 2004. Chemical cleaning in 2001

ATTACHMENT A – SUMMARY OF RECOVERY BOILER INCIDENTS (Continued)

SPRING 2005 - 32	
Location:	**Tembec USA, llc, St. Francisville, Louisiana**
Unit:	Recovery Boiler No. 1 (RB1). B&W Contract PR-85. Startup 1965. B&W installed component with leak in 2001
Size:	3.0 million ppd solids. Steam flow 481,000 lb/hr. Operation at 600 psig and 750F. Design at 675 psig. Two drum boiler / large economizer.
Incident Date:	November 23, 2004
Leak/Incident Loc:	**Lower Furnace –** ¾" to 1" flared crack adjacent to the top of a tube stud on 2 tubes, tubes 6 & 7, on right sidewall at primary airport level, approx 3 1/2' above the floor
Downtime hrs due to leak/total:	Outage time due to leak 66 hours & ESP. Total downtime 69 hrs.
ESP?	ESP initiated
Classification:	
How discovered:	Visually observed through liquor gun port
Leak detection:	In-house mass balance detection system was in operation but neither detected nor confirmed leak. System 10+ years old
Sequence of events:	
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Sectioned damaged tube and replaced section. X-ray of butt welds. Hydro. Visual inspection of area and UT examination of tubes both sides of damaged tube. Boroscope above and below damaged tube.
Root cause:	Tubes 6 & 7 were sent to M&M Engineering for failure analysis, their conclusion states; " The through-wall failure of the recovery boiler tube was due to a combination of corrosion ditching, and thermal fatigue around the base of the studs." "The tube wall showed no evidence of in-service over temperature exposure." Tube 5 was sent to GE Infrastructure, Woodland, TX. Their conclusions states; "The Primary Air Port tube failure resulted from severe general thinning on the fireside surface and cracking at the stud locations. Stud wastage was also found. These results suggest the primary cause for the fireside wastage was cyclic exposure to flowing smelt in the immediate vicinity of the Primary Air Port. The external cracking was likely caused by corrosion fatigue." " Microstructural analysis revealed no evidence of overheating in the microstructure at the failure position."
Future prevention:	
Last full inspection:	Last inspection April 2004. Chemical cleaning in 2001

ATTACHMENT A – SUMMARY OF RECOVERY BOILER INCIDENTS (Continued)

SPRING 2005 - 33	
Location:	**Georgia Pacific Corporation, Crossett, Arkansas**
Unit:	Unit 8R. C-I Contract No. 30179 V2RE. Startup 1981.
Size:	Steam flow 925,000 lb/hr. Operation at 850 psig & 825F. 2 drum boiler/ large economizer
Incident Date:	September 8,2004
Leak/Incident Loc:	**Furnace Floor -** 4th tube from right wall in rear corner at weld between composite tubes and floor tubes
Downtime hrs due to leak/total:	Total downtime 108 hours
ESP?	ESP initiated
Classification:	
How discovered:	Recovery Boiler Advisor (RBA) prompted visual inspection that identified leak
Leak detection:	NALCO Waterside Mass and Chemical Balance RBLI with Stone & Webster RBA detected leak
Sequence of events:	At 1100 hrs, boiler tripped on high furnace pressure. Investigation concluded that trip was a control issue. Two days later, at 0115 tripped again and concluded had a faulty pressure switch. At 0620, 3rd trip; maintenance working on several potential causes. At 0700, RBA alarmed indicating a small leak. Rapid drain alarm sounded to evacuate all unnecessary personnel and boiler walked down. Leak was identified and at 0933, ESP activated.
Bed cooling:	Southland applied sodium bicarbonate for 10-12 hours, starting ~ 16 hours after ESP. Bed cooled to 500-600F as determined by TC's inserted into bed through primary air ports. NaHCO3 credited with saving 16 hours.
Wash adjacent tube:	Yes
Repair procedure:	Removed Dutchman and replaced section with proper material
Root cause:	On original installation, a Dutchman of different ID was installed. The transition at the change in diameter created an eddy that allowed steam blanketing that over 20+ years
Future prevention:	Inspect entire floor on next outage
Last full inspection:	Last inspection May 2004. Chemically cleaned in October 2000.

ATTACHMENT A – SUMMARY OF RECOVERY BOILER INCIDENTS (Continued)

SPRING 2005 - 34	
Location:	**Interstate Paper, Riceboro, Georgia**
Unit:	B&W Contract PR-99. Startup 1968.
Size:	1.4, million ppd solids. Steam flow 219,000 lb/hr. Operating at 650 psig & 760F. Design at 725 psig. 2 drum boiler/ small economizer/ scrubber
Incident Date:	February 27, 2005
Leak/Incident Loc:	**Furnace Floor -**2 holes 1/16" x 1/8" in tube #8 from north side wall and 4 ft. from rear wall upslope. This tube and adjacent tube were gouged.
Downtime hrs due to leak/total:	Total downtime 84 hours
ESP?	ESP initiated
Classification:	
How discovered:	Operator on routine round of primary airport level saw a pool of water at port inside furnace.
Leak detection:	None installed
Sequence of events:	-7 pm 'til 12:30 am. Operator rodded entire north wall primary airports every 1.5 hours due to abnormal slagging.. Normally only 2 or 3 ports need rodding. Crew thought that a severe blackout was the cause; as the evening progressed it became clear that some other mechanism was creating the problem. The crew also heard on three different occasions smelt/water popping similar to those intermittently heard at smelt spouts. Operator began to see "sludge" on port rod when pulled out of port. – 12:30 am. Suspected a water leak inside furnace itself. – 12:40 am. Operator saw a pool of water in bed at primary port. – 12:40 to 12:50 am. Supervisor phoned management as well as checked for evidence of feedwater and steam separation, boiler water chemistry, boiler drum level, furnace high draft, excess oxygen, and boiler TRS concentration. None of these indicated a leak. Indications were of a blackout situation. Too much variation in feedwater/steam flow strip chart to clearly identify a leak. – 12:50 am. Decision to ESP based on operator observations of water pool at primary ports and sludge on rods. Initiated ESP/rapid drain. Crew evacuated to safe area with management team en route to mill. Crew shut down evaporator and concentrator feed pumps as well as heavy black liquor pumps while evacuation was taking place. – 1:00 am. Shut off main natural gas valve to mill at power house yard and verified that superheater drains were open. Established "safe" zone and marked. Mill shut down.
Bed cooling:	The crew tried to use carbon dioxide to cool bed but didn't succeed because the material froze in the lines and lances before it could enter the bed.
Wash adjacent tube:	No
Repair procedure:	Ground out failed area. TIG welded and overlaid area of defect. Inspected using mag particle and shear wave of repair and entire weld line across back of floor.
Root cause:	Impact to floor tube presumably during an annual outage. Probable cause a "jack-hammer" type impact.
Future prevention:	Mill plans a full scan of lower furnace on April 2005 annual outage and a full boiler scan on Fall outage
Last full inspection:	Last inspection 2003.

ATTACHMENT A – SUMMARY OF RECOVERY BOILER INCIDENTS (Continued)

SPRING 2005 - 35	
Location:	**Weyerhaeuser, Johnsonburg, Pennsylvania**
Unit:	Tampella Contract No 90132. Startup 1993.
Size:	2.8 million ppd solids. Steam flow 400,000 lb/hr. Operating at 1250 psig & 850F. Design 1600 psig & 900F. Single drum/large economizer.
Incident Date:	January 22, 2005
Leak/Incident Loc:	**No leak**
Downtime hrs due to leak/total:	Downtime due to ESP – 90.8 hrs. Total downtime – 96.5 hrs
ESP?	None
Classification:	**ESP without a leak**
How discovered:	N/A
Leak detection:	N/A
Sequence of events:	Abnormal alarms including high boiler bank differential and high EC pressure. Sootblowers shut off and walkdown initiated. Doors on 12th and 11th floor were going positive for 3-4 seconds and then negative for 1-2 seconds. It appeared dry steam was coming out the doors when furnace went positive. ESP was performed. After cooling, boiler hydroed 4 times at pressure and no leak determined. Boiler placed on line with gas-no leaks.
Bed cooling:	Southland Fire & Equipment applied Ansul Plus-50C Dry Chemical using nitrogen for 10 hours starting 33 hours after the ESP was activated. 5400 lb was applied cooling the bed to 470F as determined by TC probing. Application credited with saving 24 hours. Bed level was 2-3 feet.
Wash adjacent tube:	N/A
Repair procedure:	N/A
Root cause:	N/A
Future prevention:	Post-Incident review. Believe that problem started with 1 of 2 draft taps being plugged. When operator ascended for walkdown, he cleaned draft taps. ID fan coming back to normal operation probably created swings that caused puffing.
Last full inspection:	Last inspection May 2004. Acid cleaning 1993

SPRING 2005 - 36	
Location:	**International Paper, Courtland Mill, Courtland, Alabama**
Unit:	No. 2 Recovery Boiler. B&W Contract No. PR-180. Startup 1979.
Size:	4.0 million ppd solids. Steam flow 480,000 lb/hr. Operation at 450 psig & 530F. Design at 550 psig. 2 drum boiler/ DCE
Incident Date:	December 14, 2004
Leak/Incident Loc:	**No leak**
Downtime hrs due to leak/total:	Total downtime 35.2 hours
ESP?	ESP initiated
Classification:	**ESP without a leak**
How discovered:	N/A
Leak detection:	Mill mass balance system in operation
Sequence of events:	Boiler steaming at MCR burning 64.8% solids liquor. Operator noticed bed blacking out and sent field operator to investigate. 5 min. later boiler tripped on low drum level; steaming rate had dropped. Operator suspected a leak and initiated ESP
Bed cooling:	Blew in sodium bicarbonate for 3 hrs starting 17 hrs after ESP. Bed cooled below 800F as determined by TC probe. Credited with saving 2 hrs
Wash adjacent tube:	N/A
Repair procedure:	N/A
Root cause:	N/A
Future prevention:	
Last full inspection:	2004

ATTACHMENT B

NATIONAL BOARD OF BOILER AND PRESSURE VESSEL INSPECTORS
REPORT – Bob Sullivan – April 6, 2005

PART RB – INSERVICE INPECTION OF PRESSURE-RETANNING ITEMS

RB-5602 BLACK LIQUOR (KRAFT OR SULFATE) RECOVERY BOILERS **A04**

Boilers of this type are used in the pulp and paper industry. Black liquor is a by-product of pulping processing. It contains organic and inorganic constituents and is concentrated from about 10%solids to at least 58% solids for firing in the recovery boilers. The organic material that is dissolved in the pulping process combusts and the spent pulping chemicals form a molten pool in the furnace. The molten material, or "smelt," drains from the furnace wall through smelt spouts into a smelt-dissolving tank for recovery of the chemicals. Ultimately, the by-product of the recovery process is steam used for processing and power. Gas or oil auxiliary burners are used to start the self-sustaining black liquor combustion process and may be used to produce supplemental steam if sufficient liquor is not available. **A04**

The recovery combustion process requires a reducing atmosphere near the furnace floor and an oxidizing atmosphere in the upper furnace for completion of combustion. Pres- sure parts within the furnace require protec- tion from the reducing atmosphere and from sulfidiation. The rate of corrosion within the furnace is temperature dependent. Boilers operating up to 900 psi (6 MPa) typically have plain carbon steel steam generating tubes with pin studs applied to the lower furnace to retain a protective layer of refractory or "frozen" smelt. Above 900 psi (6 MPa) the lower furnace tubes will typically have a special corrosion protection outer layer. The most common is a stainless steel clad "composite tube." Other protection methods are corrosion resistant overlay welding, thermal or plasma spray coating and diffusion coating. **A04**

The unique hazard of these boilers is the potential for an explosion if water should be combined with the molten smelt. The primary source of water is from pressure part failure, permitting water to enter the furnace. The owner's inspection program is carefully developed and executed at appropriate intervals to ensure pressure part failure that could admit water to the furnace be avoided. A second source of water is the liquor fuel. Permitting black liquor of 58% or lower solids content to enter the furnace can also result in an explosion. The black liquor firing controls include devices, which monitor and automatically divert the liquor from the furnace if solids content is 58% or lower.

In addition to the general inspection requirements for all watertube type boilers, particular awareness in the following areas is necessary: **A04**

- ***Furnace* – the type and scope of wall, roof and water screen tube inspection is dependent on materials of construction, type of construction and mode of boiler operation. In all cases, furnace wall opening tubes need inspection for thinning and cracking. The typical water-cooled smelt spout can admit water to the furnace if the spout fails. Common practice is to replace these spouts in an interval shorter than**

that in which failure is known to occur.

- ***Water* – percentage of solids contained in the black liquor before entering the furnace should be closely monitored. Verify the black liquor firing system will automatically divert the liquor if solids drop to or below 58%.** A04

- ***Corrosion/erosion* – the potential consequences of corrosion or erosion (smelt-water explosion due to pressure-retaining part failure) requires a well planned and executed inspection program by the owner. Maintenance of boiler water quality is crucial to minimizing tube failure originating from the water side.** A04

- ***Tubes* – depending on type of construction, inspect for damage such as loss of corrosion protection, thinning, erosion, overheating, warping, elongation, bulging, blistering and misalignment. If floor tubes may have been mechanically damaged or overheated, clean the floor and perform appropriate type of inspection for suspected damage. Excursions in water treatment may result in scale and sludge on internal surfaces, creating conditions of poor heat transfer and ultimately causing crack or rupture of tube.** A04

- ***Welds* – leaks frequently originate at welds. The owner and repair agency should carefully plan and inspect all repair welds that could admit water to the furnace. Tube butt welds that could admit water to the furnace should be examined by a volumetric NDE method acceptable to the inspector. Tube leaks at attachment welds may originate from the internal stress-assisted corrosion (SAC). Minor upsets in boiler water quality and improper chemical cleaning may initiate SAC.** A04

- ***Emergency Response to Water Entering Furnace* – operators of Kraft recovery boilers should have a plan to immediately terminate all fuel firing and drain water from the boiler if a tube is known or suspected to be leaking into the furnace. This system may be called "Emergency Shutdown Procedure" or "ESP". The inspector should confirm the ESP is tested and maintained such that it will function as intended and that operators will activate the system when a leak into the furnace occurs or is suspected.** A04

- ***Overheating* – tube rupture due to overheating from low water level may admit water to the furnace. The inspector should verify a redundant low-water protection scheme is provided and maintained.** A04

Specific procedures for inspection of black liquor recovery boilers are detailed in:

- **American Forest and Paper Association *"Recovery Boiler Reference Manual for Owners and Operators of Kraft Recovery Boilers,"* sponsored by the Operations/Maintenance Subcommittee of the Recovery Boiler Committee, Volumes I (revised June 1991), II (revised June 1991) and III (first edition October 1984)** A04

- **The Black Liquor Recovery Boiler Advisory Committee, Recommended Practices**: A04
  - **-- Emergency Shutdown Procedure (ESP) and Procedure for Testing ESP**
  - **-- Safe Firing of Black Liquor Recovery Boilers**
  - **-- System for Black Liquor Boilers**
  - **-- Safe Firing of Black Liquor in Black Liquor Recovery Boilers**
  - **-- Safe Firing of Auxiliary Fuel in Black Liquor Recovery Boilers**
  - **-- Thermal Oxidation of Waste Streams in Black Liquor Recovery Boilers**
  - **-- Instrumentation Checklist and Classification Guide for Instruments and Control Systems used in the Operation of Black Liquor Recovery Boilers**
  - **-- Recommended Guidelines for Personnel Safety**

Technical Association of the Pulp & Paper Industry (TAPPI), Technical Information Papers: A04

-- **0402-12,** ***Guidelines to Assure Quality Radiography of Boiler Tubes and Pipe Weldments in the Paper Industry***
-- **0402-13,** ***Guidelines for Specification and Inspection of Electric Resistance Welded (ERW) and Seamless Boiler Tube for Critical and Non-Critical Service***
-- **0402-15,** ***Installation and Repair of Pin Studs in Black Liquor Recovery Boilers;*** **Part I:** ***Guidelines for Accurate Tube Thickness Testing*** **Part II:** ***Default Layouts for Tube Thickness Surveys in Various Boiler Zones***
-- **0402-21,** ***Ultrasonic Technician Performance Test for Boiler Tube Inspection***
-- **0402-30,** ***Inspection for Cracking of Composite Tubes in Black Liquor Recovery Boilers***
-- **0402-31,** ***Guidelines for Evaluating the Quality of Boiler Tube Butt Welds with Ultrasonic Testing***
-- **0402-33,** ***Guideline for Obtaining High Quality Readiographic Testing (RT) of Butt Welds in Boiler Tubes***