BLACK LIQUOR RECOVERY BOILER
ADVISORY COMMITTEE

Crowne Plaza Hotel/Atlanta Airport
Atlanta, Georgia
October 4, 5, & 6, 2004

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** (new) Georgia-Pacific P. O. Box 105605 Atlanta, GA 30348-5605	Tel: 404-652-4629 Fax: 404-584-1466 **ktmorenc@gapac.com**
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Treasurer:	**Ron Hess** HSB Forest Products Group 110 Cedar Cove Court Buckhead, GA 30625	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.

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

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

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BLRBAC MEETING SCHEDULE

Spring	2005	--	April	4, 5, & 6
Fall	2005	--	October	3, 4, & 5
Spring	2006	--	April	3, 4, & 5
Fall	2006	--	October	2, 3, & 4

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

■ Past Chairman Lon Schroeder

■

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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 WEB site and this is where they should obtain the following information for the BLRBAC meetings:

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 number, 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. He will see that your concerns are brought up and discussed during the Operating Problems session at the next meeting.

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BLRBAC Publications List

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
(March 2004)

Waste Stream Incineration
(April 2002)

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+ = Attended 10-2004 meeting
# = Attended 4/04 meeting
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SAFE FIRING OF AUXILIARY FUEL SUBCOMMITTEE

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No meeting held during 04/04/04 BLRBAC

SAFE FIRING OF BLACK LIQUOR SUBCOMMITTEE

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George Orme Allianz 7480 Cason Circle Gladstone, OR 97207 Tel: 503-657-8530 Fax: N/A **E-mail: gorme @aic-allianz.com**	Steve Osborne Babcock & Wilcox 20 S. Van Buren Ave. Barberton, OH 44203 Tel: 330-860-1686 Fax: 330-860-9023 **E-mail: slosborne @babcock.com**	

* = Attended 10/04 Meeting

WASTE STEAMS SUBCOMMITTEE

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* = Attended 10/04 Meeting

Registered for the meeting were:

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

Alabama River Pulp
Browning, John, Perdue Hill, AL
Chastain, Ryan, Perdue Hill, AL
Drew, Sandi, Perdue Hill, AL
Gornto, Bruce, Perdue Hill, AL
Needham, Chris, Perdue Hill, AL
Porter, Dean, Perdue Hill, AL
Robinson, Allen, Perdue Hill, AL
Thomes, Anthony, Perdue Hill, AL
Williams, John, Perdue Hill, AL

Allianz Risk Consultants
Higgins, Andrew, Atlanta, GA

Alstom Power
Barry, Mike, Charlotte, NC
Gadai, David, Windsor, CT
Holbrook, John, Sykesville, MD
Hollenbach, Dennis, Windsor, CT
Mauritzson, Christer, Vaxjo, Sweden
Sweet, Matt, Windsor, CT
Young, Rick, Chattanooga, TN

AMEC Kamtech
Dean, Jerry, Tucker, GA
Dresser, Bob, Tucker, GA
Ward, Aubrey, Alpharetta, GA
Warren, Doug, Tucker, GA

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

Andritz, Inc.
Collins, Peter, Alpharetta, GA
Holm, Ralf, Alpharetta, GA
Kujanpaa, Olli, Alpharetta, GA
Kvist, Marko, Alpharetta, GA
Lindh, Timo, Alpharetta, GA
Phillips, John, Alpharetta, GA
Sopanen, Jari, Curitiba, Brazil

Aon Risk Services
Yong, Steve, Singapore

Applied Technical Services
Elrod, Mark, Marietta, Georgia
Hills, Jim, Marietta, Georgia
Thomas, Rodney, Marietta, Georgia

Asia Pulp and Paper
Atmadja, Thomas, Jakarta, Indonesia

Avistar, Inc.
Banks, Jeremy, Albuquerque, NM
Cooper, Steve, Albuquerque, NM

AXA Corporate Solutions
Abel, Frederic, Lyon, France

Babcock & Wilcox
Dickinson, Jim, Barberton, OH
Grant, Tommy, Greenville, SC
Kulig, John, Barberton, OH
Osborne, Steve, Barberton, OH
Sherlock, H. Bentley, Atlanta, GA
Yash, John, Atlanta, GA

Registered for the meeting were:

Boise Cascade
Breaux, Bob, Jackson, AL
Erickson, Leonard, Boise, ID
Fiedler, Byron, International Falls, MN
McBride, Dwayne, International Falls, MN
Nease, Scott, DeRidder, LA
von Oepen, David, Jackson, AL
Tarleton, Mike, Jackson, AL

Bowater
Cambron, Tim, Coosa Pines, AL
Clemmons, David, Catawba, SC

Buckeye Technologies
Streit, David, Perry, FL

Buckman Laboratories
Fannin, Timothy, Lugoff, SC
Graham, James, Memphis, TN

C.N.A. Risk Control
Walker, Billy, Apex, NC

CBC Industrias Pesadas
Faria, Ronaldo Flavio, S.A., Brazil

CIMS Ltd
Young, Jim, Richmond, BC, Canada

Clement Consulting
Clement, Jack, Akron, OH

Coen Company
Wadhwani, B.K., Burlingame, CA

Cooperheat - MQS
O'Connor, Shawn, North Augusta, SC

CORR System, Inc. (TTS)
Ruiz de Molina, Eladio, Birmingham, AL

Diamond Power
Abdullah, Rami, Lancaster, OH
Mike, Dowling, Lancaster, OH
Whitehead, Brian, Lancaster. OH

Ecolochem. Inc.
Istre, Richard, Norfolk, VA

Electron Machine Corp., The
Jarrett, Gordon, Umatilla, FL
Vossberg, Carl IV, Umatilla, FL

Environmental Elements
Balasic, Paul, Baltimore, MD
Bringman, Lewis, Baltimore, MD
Hug, Don, Baltimore, MD
Ozan, Scott, Baltimore, MD

Eurocan Pulp & Paper
Lacey, Don, Kitimat, BC, Canada
Lawrence, Glenn, Kitimat, BC, Canada

FL Smith
Shanahan, Dennis, Pensacola, FL

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

FM Global
Beaulieu, Andre, Montreal, Que. Canada
Cooke, Craig, Oconomowoc, WI
Cooper, Mark, Bellevue, WA
Crysel, Scott, Plano, TX
Duncan, Jim, Staunton, VA
Hoffman, Daryl, Sammamish, WA
James, Robert, Plano, TX
Lamb, Ron, Parsippany, NJ

Registered for the meeting were:

FM Global (cont.)
Lang, David, Bedminster, NJ
Lemay, Brian, Thornhill, Ont. Canada
Matarrese, Rick, Alpharetta, GA
Morgan, Rick, Plano, TX
Parrish, David, Norwood, MA
Polagye, Mike, Norwood, MA
Philpott, Wayne, Alpharetta, GA
Onstead, Jimmy, Plano, TX

GE GAP Services
Franks, James, Somerville, TN
Lynch, Joe, Alpharetta, GA
Merritt, Brad, Charlotte, NC

GE Insurance Solutions
Sides, Michael, Ocoee, FL

General Reinsurance Corp.
Freeman, Stuart Jr., Atlanta, GA

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

Georgia-Pacific
Morency, Karl, Atlanta, GA
Smith, Roger, Atlanta, GA

Global Risk Consultants
Cain, Morgan, Friendsville, TN
Jackson, Christopher, Beaverton, OR
Macaulay, Charlie, Issaquah, WA
Smith, Andy, Atlanta, GA

Graphic Packaging International
Hazard, Joel, Macon, GA
Shaw, Bill, Macon, GA
Tanesua, Tyson, Macon, GA

Gulf States Paper
Tarpley, Donn, Demopolis, AL

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

Hercules
Bowen, Glenn, Glenwood, NY
Robinson, James, Trevose, PA

HSB Professional Loss Control
DeBeer, Thomas, Woodstock, GA

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

International Paper
Clay, Dean, Loveland, OH
Coleman, Rex, Savannah, GA
Fuhrmann, Dave, Loveland, OH
Koth, Ken, Eastover, SC
McCarty, Ronald, Sandia Park, NM
Sargent, Mark, Loveland, OH
Slagel, David, Savannah, GA
Stringfellow, David, Loveland, OH
Vuoso, Jerry, Memphis, TN

Interstate Paper Corp.
Crosby, Phillip, Riceboro, GA

Irving Pulp & Paper
Glenn, Matt, Saint John, NB, Canada
Mott, Dan, Saint John, NB, Canada

Jaakko Poyry Oy
Kohlmann, Jens, Vantaa, Finland

Registered for the meeting were:

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

Jansen Technologies
Drottar, Jerry, Kirkland, WA
Verloop, Arie, Kirkland, WA

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

Kimberly-Clark
Kaufmann, Brian, Roswell, GA

K-Patents, Inc.
Pyorala, Keijo, Naperville, IL

Kvaerner Pulping
Abrams, Larry, Charlotte, NC
Briggs, Jon, Charlotte, NC
Christiansen, Gene, Charlotte, NC
Geedey, Jim, Charlotte, NC
King, Dave, Charlotte, NC
McKinney, Carolyn, Charlotte, NC
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, Greg, Longview, WA

Longview Inspection
Cooper, Mike, LaPorte, TX

Marsh, Inc.
Eaves, Dennis, Atlanta, GA
Hyche, Dwight, Meridian, MS
Wallace, Steve, Atlanta, GA

MeadWestvaco
Andrews, John, Charleston, SC
Burn, Robert, Charleston, SC
Henriques, Fabian, Chillicothe, OH
Hollar, Leslie, Chillicothe, OH
Klitzke, Rudimar, Covington, VA
Kosin, Wesley, Chasteston, SC
Lindsey, Larry, Phenix City, AL
Murch, Douglas, Miamisburg, OH
Sanders, Doug, Phenix City, AL
Williams, Jimmy, Phenix City, AL

Mechanical & Materials Engrg.
Moskal, Max, Indian Head Pk., IL

Mid-America Packaging
Goss, Joe, Pine Bluff, AR

Nalco Company
Totura, George, Naperville, IL

National Board of BPVI
Sullivan, Robert, Columbus, OH

Marsh, Inc.
Eaves, Dennis, Atlanta, GA
Hyche, Dwight, Meridian, MS

Norske Skog
Norton, Bob, Campbell River, BC, Canada

Orbital Wesco - Industra
Phillips, Dan, Tualatin, OR

P. H. Glatfelter Co.
Gentzler, Bill, Spring Grove, PA

Registered for the meeting were:

P.T. Indah Kiat Pulp & Paper
Chi-Nan, Lu, Riau, Indonesia
Dasril, Riau, Indonesia

Packaging Corp. of America
Farris, Mike, Counce, TN
Ferrell, Larry, Valdosta, GA
Gaedtke, Brad, Tomahawk, WI
Kummerfeldt, Bruce, Tomahawk, WI
Parks, Kurt, Valdosta, GA
Stelling, John, Tomahawk, WI

Potlatch
Bliss, John, McGehee, AR

Power Specialists Assoc. Inc.
Bernard, Ron, Somers, CT
Madersky, Tom, Somers, CT
Pellitier, Jamie, Somers, CT
Zawistowski, Bob, Somers, CT

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

Propal Pulp & Paper
Bustamante, Rafael, Cali, Colombia

PT Lontar Papyrus Pulp & Paper
Hartawan, Gadang, Jambi, Indonesia
Taeratanachai, Chaisagna, Jambi, Indonesia

Recirculation Technologies
Finley, Bob, Warminster, PA
Finley, John, Warminster, PA
Gaus, Jeff, Shreveport, LA

Rick Spangler, Inc.
Spangler, Rick, St. Simons Island, GA

RiNan, Inc.
Pothier, Richard, Peabody, MA

RMR Mechanical
Roy, Bob, Cumming, GA

Rockwell Automation
Severn, Steve, Mayfield Hts., OH

SAPPI Forest Products
Aderman, Craig, Westbrook, ME
Merriman, Nick, Johannesburg, So. Africa

Savcor Ltd.
Svensson, Casimir, Atlanta, GA

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

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

Smurfit-Stone Container
Baker, Kenneth, Florence, SC
Benoit, Stephane, New Richmond, Que.
Craig, David, Hodge, LA
English, Phil, Jacksonville, FL
Green, William, West Point, VA
Jenkins, Clarence, West Point, VA
Jones, Robert, Stevenson, AL
Pate, Jerry, Brewton, AL
Stephenson, Ken, Florence, SC

SOMPO Japan Risk Management
Muramatsu, Ken-ichi. Tokyo, Japan

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

Stora Enso North America
Ashbeck, Steve, Wisconsin Rapids, WI

Stora Enso North America
Wouters, Matt, Wisconsin Rapids, WI

Registered for the meeting were:

Tembec
Delatte, Ronnie, St. Francisville, LA
Tillman, Debra, St. Francisville, LA
Tillman, Mike, St. Francisville, LA

Temple Inland Forest Products
Baldwin, Ryan, Sugar Land, TX
Ja'arah, Majed, Orange, TX

Turner Company
Breaux, Ronnie, Baton Rouge, LA

UPM-Kymmene Miramichi, Inc.
Flieger, Ron, Miramich, NB

VISY Pulp & Paper
Crosher, John, Tumut, Australia

VISY Pulp & Paper
Stoltz, Johan, Tumut, Australia

Welding Services, Inc.
Welch, Mike, Norcross, GA

Weldwood of Canada Ltd.
Hnatuk, Fred, Hinton, Alberta, Canada

Weyerhaeuser
Avery, David, Bennettsville, SC
Barreca, Clif, New Bern, NC
Beder, Hank, Federal Way, WA
Cherry, Tony, Pine Hill, AL
Frisby, Johnny, Columbus, MS
Gore, Chris, Bennettsville, SC
Hudson, Tony, Pine Hill, AL
Johnson, J. R., Springfield, OR
Larrimore, Brad, Pine Hill, AL
Loper, Ricky, Pine Hill, AL
McMahon, Bill, Springfield, OR
Pile, Dave, Bennettsville, SC
Roberts, Steve, Columbus, MS
Smith, Stephanie, Pine Hill, AL
Snyder, Orville, Hawesville, KY
Vandermeer, Bert, Grande Prairie, AB
Worsham, Jesse, Bennettsville, SC

Zampell Refractories
Barrett, Lynn, Tampa, FL

INTRODUCTION

BLRBAC's Chairman, Dean Clay, called the meeting to order at 8:00 a.m. on Wednesday, October 6th.

CHAIRMAN: I would like to welcome all of you to the BLRBAC Main Committee meeting. For those of you who can't see us, we're right here. We are a little lower than we normally are, but our survey said make changes to BLRBAC. So this is the first thing we did. We lowered the Executive Committee.

We will be following 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 SPRING 2004 – Dean Clay

The first item on the agenda is Old Business. We need to approve the Minutes from the April 2004 meeting. So, I'll just quickly go over what the Minutes are and where they are at. The Minutes cover the details of the previous meeting, such as, the submitted reports from the Subcommittees. They are posted on the BLRBAC.ORG Web site. We do send an e-mail out to the members for whom we have an e-mail address and for all the attendees of the previous meeting. We notify them when the Minutes have been actually published on the Web site. Our goal is to get the Minutes on the Web site within two months of the previous meeting. So if for some reason you don't get an e-mail, just check it about that time. The Minutes are available to everyone. There is no restriction on the Web site. All the documents are available to anyone who wants to go to BLRBAC.ORG. We also currently maintain a listing of past Minutes. Right now the posted Minutes go back to 2001 on the Web site.

What we would like to do now is to vote on accepting the April 2004 Minutes as posted on the Web site. Since some people are new to the meeting, let me just go over the BLRBAC Articles of Association and By-laws, which is our official guidance. These Articles are also posted on the BLRBAC Web site. This document states that Regular membership in BLRBAC is open to organizations operating, manufacturing or insuring chemical recovery boilers. So each regular member company is allowed one vote in our voting process. Voting members, if we got the ribbons right, should have a red ribbon on their nametag. So when I ask for a vote, please only have one person per member company respond.

I would like to open it to a motion from a member to accept the minutes? Could I have a second? Those in favor raise your hand. Okay. Opposed. Thank you. The April Minutes are accepted as written.

NEW BUSINESS

1. NEW MEMBERS/REPRESENTATIVE CHANGES REPORT – Mike Polagye

Again, for those of you who are new at the organization, I serve as Secretary for BLRBAC. Last night in the Executive Committee closed meeting, the Executive Committee reviewed two requests for membership.

NEW REGULAR MEMBERSHIP

No requests from organizations qualifying for regular membership were received.

NEW ASSOCIATE MEMBERSHIPS

Recirculation Technologies, Inc. (RTI) Warminster, PA – Providers of water treatment services.

Need to designate Associate Representative
Need to designate Alternate Associate Representative

Savcor, Ltd., Atlanta, GA – Providers of corrosion monitoring and process measurement services for recovery boilers.

Casimir Svensson designated as Associate Representative
Martti Pulliainen designated as Alternate Associate Representative

REGULAR REPRESENTATIVE CHANGES

Lincoln Paper & Tissue
Timothy Davis named as Alternate Representative

Potlatch Corporation
Dave Bliss replaces Chuck Hartley as Representative

ASSOCIATE REPRESENTATIVE CHANGES

Universal Dynamics, Ltd.
Dale Roskob replaces Eddie Koyama as Alternate Associate Representative

CORRESPONDING MEMBERSHIP CHANGES

CBC Industrias Pesadas S.A.
Marco Antonio De Sequeira Franca replaces Nelson Takahashi as Corr. Alt. Rep.

MEMBERSHIP COMPANY NAME CHANGE

We are not aware of any membership company name changes at this time.

2. EXECUTIVE COMMITTEE REPORT – Dean Clay

The Executive Committee met in a closed session on Tuesday afternoon. There were six members present. Scott Moyer was unable to attend. As we are scheduled at this meeting to elect new officers, we did review the report of the Nominating Committee and that slate of proposed officers will be presented after the Treasurer's report.

We also discussed the joint AF&PA/BLRBAC seminar on water treatment that will be scheduled to follow the Spring 2005 BLRBAC meeting. It will continue on Wednesday afternoon and run all day Thursday. We will be sending out information via e-mail on the agenda for that seminar and the process to register.

We did spend a fair amount of time reviewing the 70 or so responses we received to the survey. We want to thank everyone who took the time to respond. For those of you who are still interested, but missed the chance, it is still available on the WEB site and we would be happy to receive additional input. As one might expect we got a wide variety of responses. Some people loved the hotel, some people hate the hotel, some people want to go to Orlando, etc. Again, we appreciate the input. We did initiate some discussion on it and thought maybe the best way to try to thin it out and come up with a few proposed action items would be to have a small new subcommittee headed by the soon to be elected new Vice-Chairman. So he is going to be accepting volunteers to be on this little subcommittee or he will be appointing volunteers to help him review the comments and come back to the Executive Committee with some specific proposed improvements to BLRBAC. Again, if you want to be on the subcommittee or you want to simply submit additional comments via the survey, either way we would appreciate your input. We would like to remind you, as you all know, that we are an all-volunteer organization. We do pay Barbara Holich & Company to handle registration and the e-mail flow of information, but everyone else is a volunteer. So, some of the concepts while good, you know moving the location every meeting to desirable sites is perhaps beyond our organizational skills. Again, we will accept any comments and we will be reviewing them and coming up with some items to act on.

We also discussed finances and I'll let Ron Hess cover that for us.

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 about $14,100 and the checking account balance is right around $50,000. Of course, that is before we pay the bills for this meeting. We've been hovering around the checking account balance between $35,000 to $36,000. We are in good shape financially.

We also have an operating budget. Prior to this meeting we were at about 46% of our budget, so after this meeting and through the rest of the year we should come in under budget for the operating budget that we developed.

3. TREASURER'S REPORT (Cont.)

We have been able to reduce our costs by monitoring what you really need to get the meetings done, such as, A/V, copying, etc., or things of that nature. So your continuing to work with us on things of that nature will help us manage these costs and keep things in a positive light like we currently are.

As far as the attendance for this particular meeting, we had 178 Advance registrations and we had 63 At Door registrations. This is a big number of At Door registrations. Usually we only have about 20 or 30 people do At Door registrations. Of those registered, we had 31 paper companies represented; 13 insurance or insurance service related companies; 5 boiler manufacturers; and we had 28 Associate members attending and six guests of member companies.

For this meeting we had a lot of offshore guests. We had two from Australia; five from Indonesia; one from Singapore; one from Japan; one from France; one from Sweden; one from Finland; two from Brazil; and two from Colombia. We really appreciate the efforts of those people to attend our meetings and participate.

Are there any questions?

As Dean indicated, he selected a Nominating Committee. Under the Articles of our Association, the Chair, the Vice-Chair, and the three Representatives: Operating Company; Boiler Manufacturer; and Insurance Company representatives shall be elected biannually from among representatives of our regular membership. They serve until the next election and shall not serve for more than two consecutive two-year terms. The Chairman shall direct and develop a Nominating Committee of at least three members. Dean did that. It was duly formed with myself, Mark Sargent and Dave Streit. Based on our research and inquiries, we have the following nominations:

Chair	Karl Morency of Georgia Pacific
Vice-Chair	Len Erickson of Boise
Operating Company Rep.	Scott Moyer of Rayonier
Boiler Manufacturer Rep.	Preston Morgan of Kvaerner
Insurance Company Rep.	Jimmy Onstead of FM Global

Before closing the nominations, do any of you have any nominations or someone we missed or didn't talk to who might be interested in any of those positions? Okay, Mr. Chair, we have no nominations from the floor and I move to close the nomination process and turn this over to you for member voting on the positions.

CHAIRMAN: Thank you, Ron. Okay, the slate of new officers has been read. I would propose to put it to vote as a single vote being that there are no other nominations. So those members in favor of accepting the slate of new officers please raise your hands. Thanks you. Those opposed? I would say that the proposed slate of officers has been voted on and unanimously accepted by the members.

4. SECRETARY'S REPORT – Mike Polagye

Good morning everybody. By the way, the new officers take effect at the close of this meeting; so Dean is not off the hook yet.

A couple of weeks ago I attended a Safety in Ammonia Plant Symposium. The keynote speaker was from the Chemical Safety Board and the focus of his talk was on loss prevention and personnel safety. There were several things that he said that seemed particularly germane to recovery boilers as well. I thought I would take this opportunity to share some of those thoughts with you.

One of his points was that on-going operator training is essential. He noted that emergencies don't happen that often and unless operators are trained and have refresher training to keep them prepared to recognize emergencies and know how to respond to them, they are not likely to perform acceptably when an emergency arises. I think we saw in our review of incidents yesterday how important operator training is to be aware of indications of emergency situations and to know how to respond.

He also commented on the importance of maintenance personnel training. So that they don't service a valve, vessel, tank or boiler while it is under pressure and expose themselves and other to personnel injury or equipment damage.

He talked about management of change. This was his term for describing it. Pointing out how important it is that before any changes are made to equipment, to instrumentation, to controls, or to interlocks, that those changes be reviewed and accepted by the appropriate individuals. He also mentioned the need to document those changes so that going forward people know the current status of all the equipment.

His last comment was a pretty good gem. He said, "Don't let deviations become the norm!" Looking at a hypothetical problem with auxiliary burners on recovery boilers could be an example of what he was talking about. Let's say a mill was trying to start an auxiliary burner and was having trouble. They end up sending an operator out with a hand torch. He successfully lights off the burner after the regular igniter was unable to do it for some reason. So the next time they light off that auxiliary burner the same problem happens. They again send the operator out with a hand torch and they are successfully lighting it off that way again. So by the third or fourth time the operator doesn't even bother with trying the igniter. He just picks up the hand torch and walk out to the burner and just lights it off that way. The warning was, "Don't let that become the norm!" When there are problems, get them fixed so that you don't incur larger problems going down the road.

One of the things about being in the insurance industry, we don't get the hands-on experience that many of you in this room receive; but we do get this opportunity to see different industry groups, different segments of the world's manufacturing and their input on what they do and can share their experiences. One of the more rewarding aspects of being in the insurance industry

4. SECRETARY'S REPORT (Cont.)

is the opportunity to get this cross-pollination between various industry groups and try to apply experiences learned in one place to the other groups who can also benefit form that experience.

The only other comment I have this morning is that there were three proposed changes to BLRBAC Recommended Practices posted on the Web site this past summer. On Monday evening when the Executive Committee met with the Subcommittee Chairs, they reported that few if any comments had been received on any of those proposed changes. As an organization, BLRBAC wants its material to offer the best advice for safe operation and maintenance of recovery boilers. We have dedicated individuals on the Subcommittees who write this material. The BLRBAC Executive Committee reviews all the material before it is posted on the Web site for membership review and comment. But even with that, these individuals only represent a small percentage of the operating plants that use the BLRBAC documents. It is possible that they or we have overlooked something that makes that advice inappropriate for some mills. Maybe it doesn't convey the information as clearly to people, reading it without the benefit of participation on the committees, believe it should. Your review and comments are essential for making these documents as useful as they can be. While each of us have a full time job and I guess all of us are being asked to do more and more, and sometimes more and more with less and less, I really encourage you when you get the e-mail that says the Minutes are posted and there are other documents on the Web site for review and comment, please take the time to look at them. Take the time to submit your comments so that we can make these documents the best that we can for all the operating personnel of recovery boilers.

CHAIRMAN: I do second your comments on soliciting as much participation as possible from the members on the documents. You can certainly always attend the Subcommittee meetings and make your comments there. We have both open and closed meetings, but purposely have the open meetings to solicit comments from the members on anything related to the topic.

SECRETARIAL SERVICES REPORT -- Barbara Holich

It is recommended that each Regular Member Company (boiler insurers, boiler operators and boiler manufacturers – voting members) have a designated Representative and Alternate Representative, preferably someone who attends BLRBAC at least occasionally.

If you are your organization's designated Representative and Alternate Representative but you have not been receiving e-mail notices from me, then I have no working e-mail address listed for you. Anyone who wishes to be added to the BLRBAC e-mail list, please e-mail me (fhholich@aol.com) your address.

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

4. SECRETARY'S REPORT (Cont.)
SECRETARIAL SERVICES REPORT (Cont.)

No changes are made to the database until written (e-mails 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 notices of meetings and meeting minutes will only be sent via e-mail. If an e-mail address is not working properly, it will be discarded 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

CHAIRMAN: Now we will head into the Subcommittee reports. Hopefully this provides a lot of useful information to the members. This gives you a chance to hear about the Subcommittee meetings you didn't attend. Although it is probably better to hear it in person than it is just to read it in the Minutes. They will also have time for questions at the end of their reports if you have any.

5. SUBCOMMITTEE REPORTS

5.1 ESP SUBCOMMITTEE REPORT – John Andrews

The ESP Subcommittee met in closed session on Monday October 4th with 11 of 13 members represented, one substitute, and one guest. John Philips was approved to serve as 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 October 5th with 12 of the 13 members represented and about 190 guests. During the open session, the Subcommittee reviewed 40 incident reports from North America and 3 International reports. (See Attachment A for a Summary of the Incidents.) Of the 40 incidents, one was a dissolving tank explosion. Sixteen (16) of the leaks were classified as critical incidents and 21 were non-critical incidents. An ESP was performed in 17 of the incidents including 11 of the critical incidents and 6 of the non-critical. One spout leak and one ESP with no leak were reported.

5. SUBCOMMITTEE REPORTS (Cont.)
5.1 ESP SUBCOMMITTEE REPORT (Cont.)

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

Explosions: An incident is classified as an Explosion only if discernible damage has occurred and does not include incidents where there is only evidence of puffs or blowback. *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 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 admit water to the boiler cavity as 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:

- 15 – Economizer
- 3 – Superheater
- 10 – Wall Tubes
- 6 – Generating Bank
- 3 – Screen Tube
- 1 – Dissolving Tank Explosion with Damage
- 1 – Smelt Spout

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 as follows:

5. SUBCOMMITTEE REPORTS (Cont.)
5.1 ESP SUBCOMMITTEE REPORT (Cont.)

- 19 – Fatigue
- 3 – Corrosion Fatigue or Stress Assisted Corrosion
- 2 - Unknown
- 4 – Weld Failure
- 6 – Corrosion / Erosion
- 1 - Mechanical Damage
- 2 – 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. Eight (8) of the leaks were identified by the control room indications and Leak Detection Systems identified 3 of the leaks. Several of the reports commented that the leaks were so small they were probably below the sensitivity of the detection system. It is important that mill operations be familiar with the capabilities and the limitations of any leak detection system installed.

Incident Review

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

Figure 2 shows the critical incidents reported each year. The 28 critical incidents reported this year is well above the recent average.

Figure 3 shows that the predominance of explosion history for the recent past has been dissolving tank explosions with four explosions last year and two this year. 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 out just under 1.2 explosions per 100 boiler years. That includes all causes combined, and is being driven by the recent dissolving tank explosions. We all need to continue making efforts to try to get that trending back down. Effort should be focused in developing better procedures to handle heavy smelt runs and plugged spouts.

5. SUBCOMMITTEE REPORTS (Cont.)

5.1 ESP SUBCOMMITTEE REPORT (Cont.)

Eight-Foot Rapid Drain Level

There were three incident reports submitted that included information on the water level in the floor following the ESP. Two of the reports indicated that the water level was below the floor and one indicated that the level was about 4 feet above the floor.

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 document, *Post ESP Water Level,"* posted on the Web site under the *Recommended Practices* shows a technique to determine the water level in the lower furnace after an ESP. 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 is maintaining an archive of information submitted on floor water level information following an ESP.

Recommended Change to ESP Document

The Executive Committee approved the following four changes to the ESP Document during the Spring 2004 meeting and they were posed in the meeting minutes and separately on the Web site for comments. One comment was received concerning some suggested editorial changes, which were reviewed by the Subcommittee during the Closed Session on Monday.

The following changes to the document (shown in bold) will be voted on by the full membership at the end of this report.

Chapter 1

•Stop All Fuels

Immediately stop firing all fuels **and ensure positive isolation of fuels from boiler**. Shut off the auxiliary fuel supply at a remote location, manually or automatically.

Chapter 3

3.6 All Fuel

The system should prove that all fuels, including black liquor, **auxiliary fuel, NCG and other waste fuels** have stopped entering the furnace. One method is to obtain positive feedback from valve proof-of-closure or position indicator switches. **Liquor firing systems recirculating to a pressurized tank require an automated shutoff valve in the recirculation line.**

3.13 Valves

3.13.1 Valve Local Selector Switch

The actuators on the rapid drain valves **and all other valves that operate during an ESP** should be wired to move the valves to the ESP position upon initiation of the ESP system regardless of the position of any local selector switch on the valve actuators.

5. SUBCOMMITTEE REPORTS (Cont.)

5.1 ESP SUBCOMMITTEE REPORT (Cont.)

3.21 System Reset

The ESP system should not be reset until **reentry to the area is permitted**. The ESP system reset logic/procedures may result in automatic movement of controls to undesired positions. Proper caution should be taken to position controls where intended. Examples of valves that may need isolation or manual positioning prior to reset include the feedwater to economizer and the steam-to-steam coil air heater(s).

3.23 Thermocouples

Recovery boilers should be equipped with floor thermocouples. The thermocouple readings should be monitored and recorded during an ESP as a means for evaluating the potential of floor tube overheating damage.

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.

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. **Note that Jack Clement has a new email address.**

The Subcommittee is now copying visuals that are included in the ESP questionnaires into a Power Point presentation to be used in the open session. Please consider the quality of visuals included with a questionnaire, in particular for those reports submitted as hard copy.

As mentioned a few minutes ago, we have some changes to the ESP document that are ready for vote. Dean, how would you like to handle this?"

CHAIRMAN: I'm open to a motion to accept the changes please. I have a motion; do I have a second? We have been moved and seconded to accept the changes as covered by John and posted on the Web site. Those in favor please raise your hand. Those opposed please raise your hand. The changes have been accepted.

Attendee's Question; Should operating companies submit an incident questionnaire if a leak is discovered during a hydro?

John's Answer: Typically we receive information on leaks discovered during a hydro as part of the information of an incident report. I don't believe we have really been looking at leaks discovered during hydros.

5. SUBCOMMITTEE REPORTS (Cont.)
5.1 ESP SUBCOMMITTEE REPORT (Cont.)

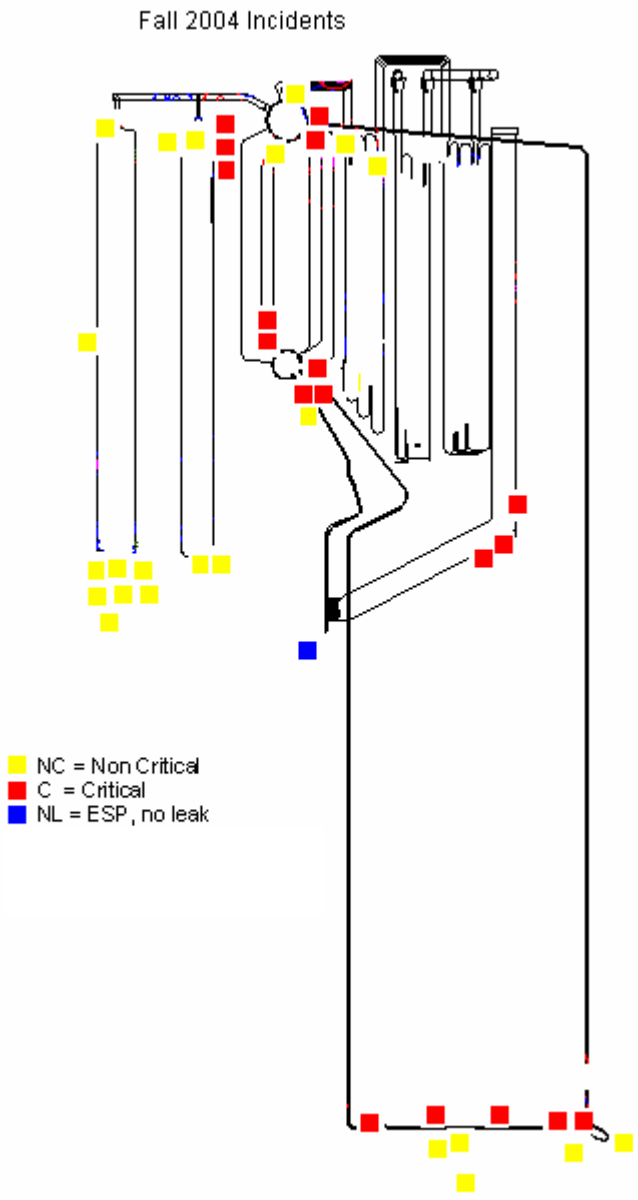


Figure 1

5. SUBCOMMITTEE REPORTS (Cont.)

5.1 ESP SUBCOMMITTEE REPORT (Cont.)

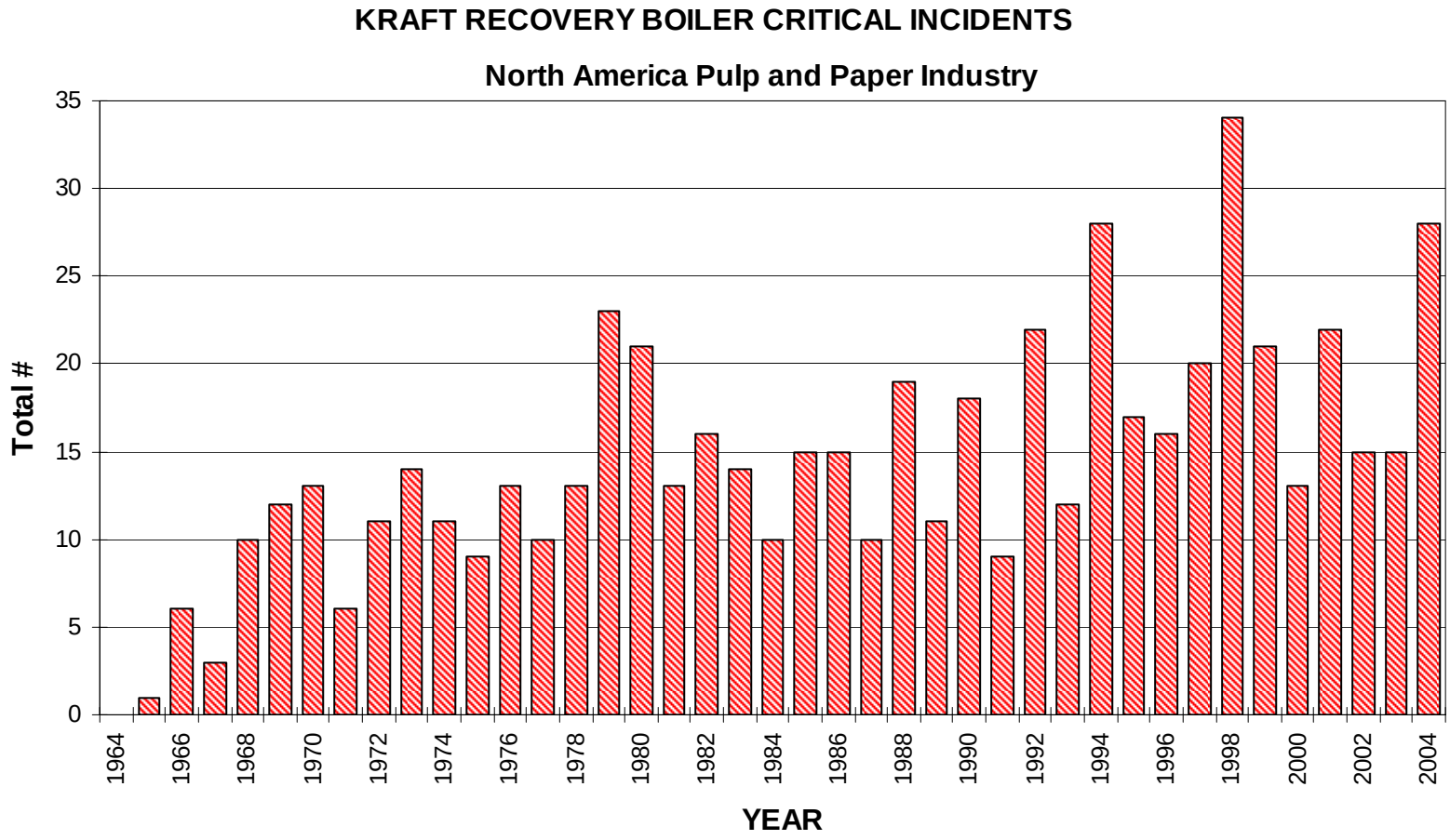


Figure 2

(Critical Incident Classification Began in 1995)

5. SUBCOMMITTEE REPORTS (Cont.)

5.1 ESP SUBCOMMITTEE REPORT (Cont.)

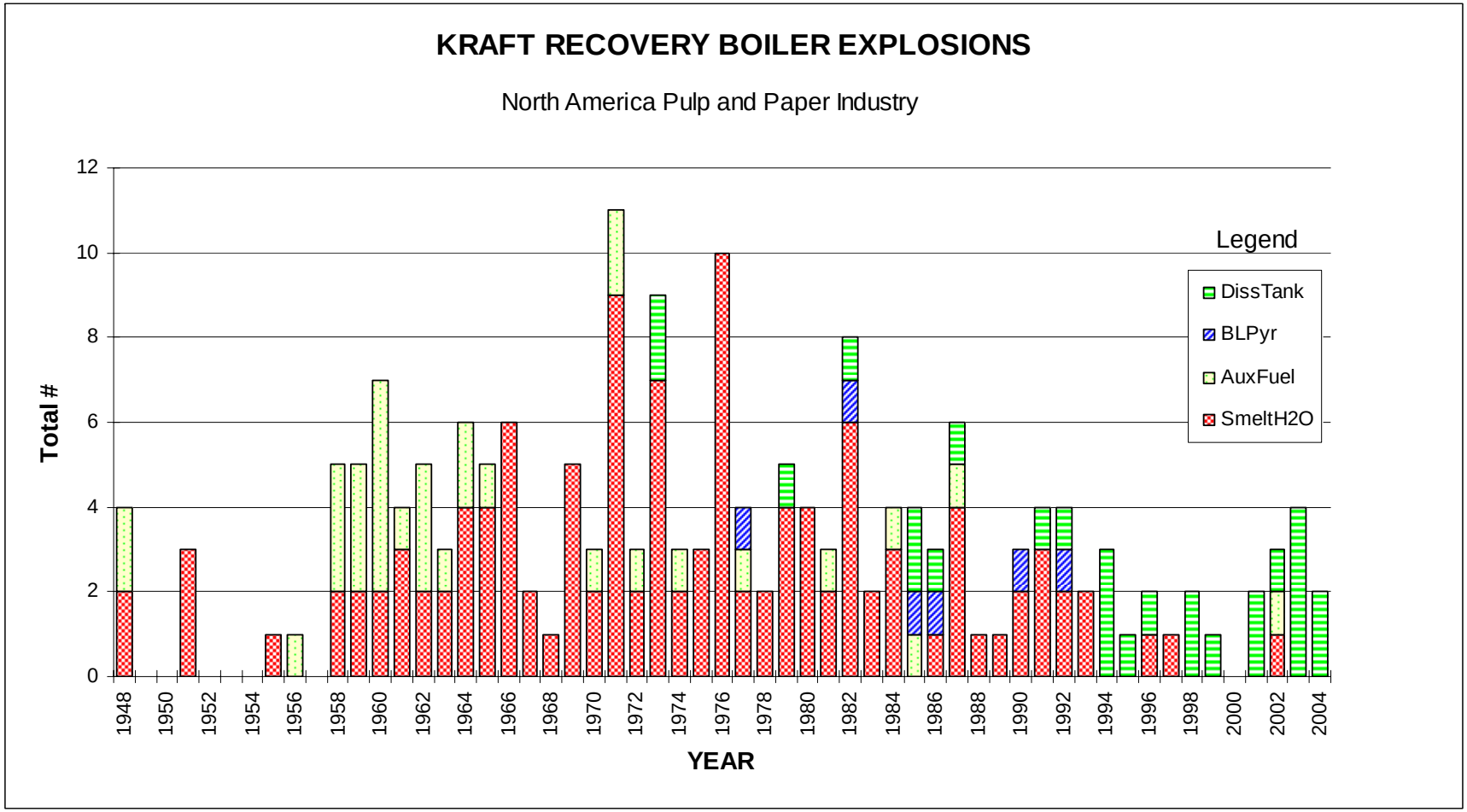


Figure 3

5. SUBCOMMITTEE REPORTS (Cont.)

5.1 ESP SUBCOMMITTEE REPORT (Cont.)

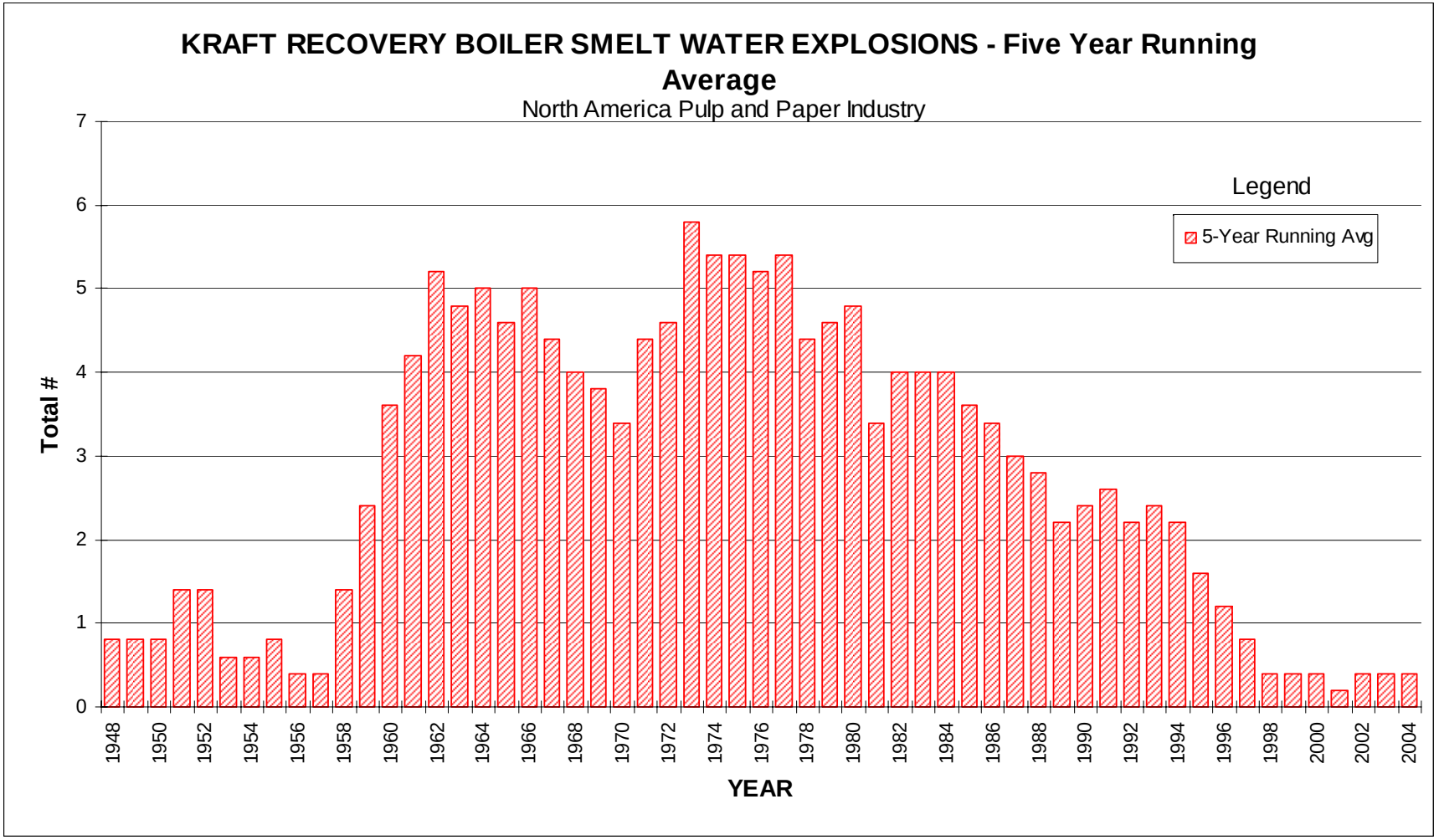


Figure 4

5. SUBCOMMITTEE REPORTS (Cont.)

5.1 ESP SUBCOMMITTEE REPORT (Cont.)

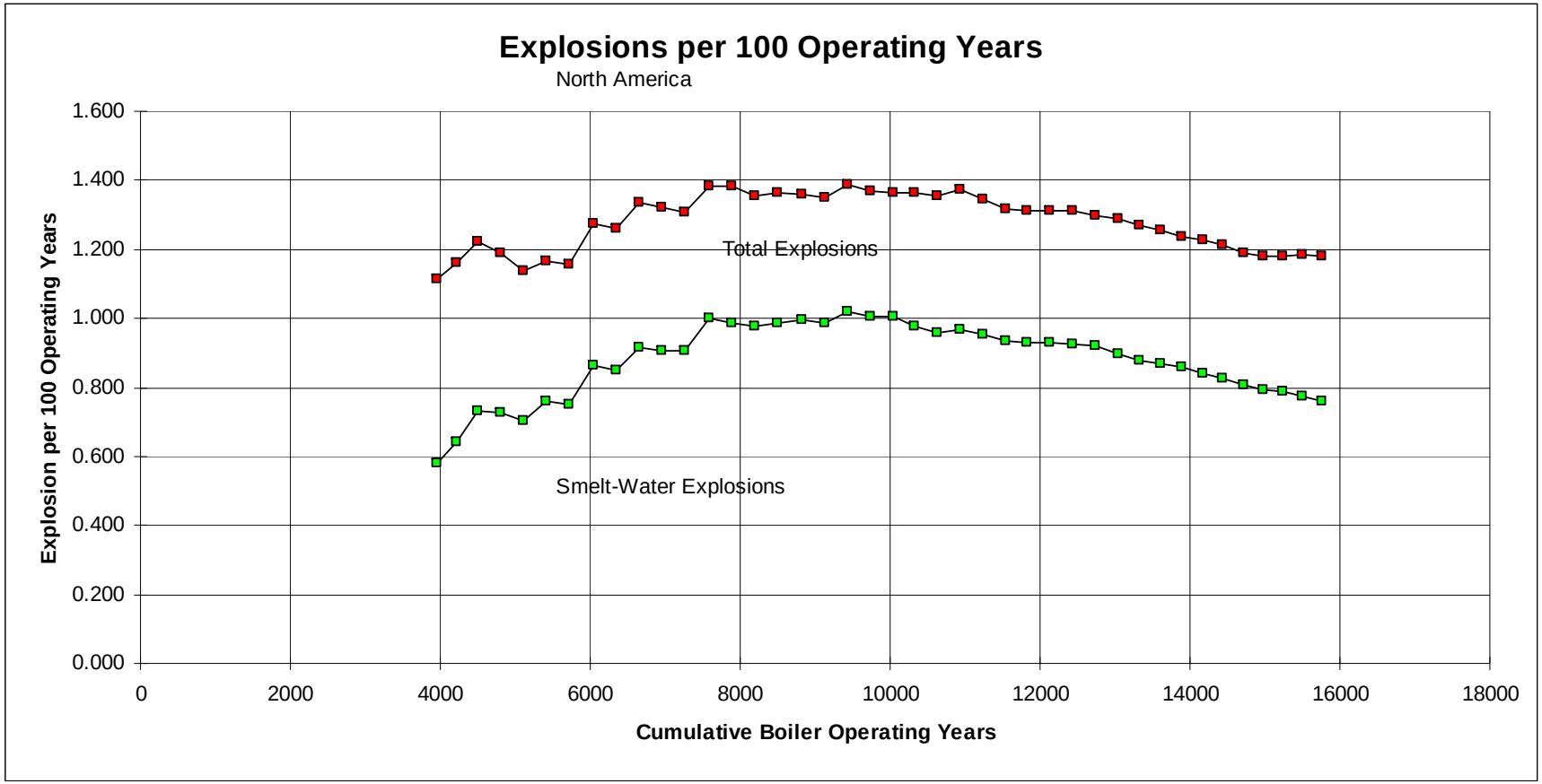


Figure 5

5. SUBCOMMITTEE REPORTS (Cont.)

CHAIRMAN: We'd also like to extend our gratitude to those mills that were able to send people to make the report presentation here at the meeting. I know not everybody can attend, but in addition to the reports, it's very helpful to have somebody from the mill present at the meeting. I guess I'll also add something to what John said. If you do have a leak at a hydro, it certainly is something that is critical to you to follow-up and determine why you had the leak. The fact it didn't cause a forced outage is no less of a reason to be concerned about it than if it did. In many cases if you have a leak at hydro, it was leaking while you were operating and you just didn't know it. It's listed on the questionnaire, and, if you feel that you have any significant learning experience that would be useful to the rest of the members and improve safety, by all means feel free to submit an Incident Report on any leak at hydro. If everybody else could improve their operation by your experience, so much the better.

5.2. INSTRUMENTATION SUBCOMMITTEE REPORT – Dave Avery

The Instrumentation Subcommittee met in two sessions Monday. The morning started as an open session with twelve members, five guest, and three presenters. A brief review of the last meeting's minutes brought members up-to-date and was followed by the presentation of our current meeting's agenda. We began with a request from the 'Safe Firing of Black Liquor Subcommittee' made last spring to review a proposal that Electron Machine Corporation (EMC) had offered to use desktop refractometers as a possible device for "Off-Line Field Measurement Techniques". EMC was contacted with a request to present their proposal to the sub-committee for consideration. EMC responded by sending three presenters (Carl Vossberg III, Carl Vossberg IV and Gordon Jarrett) to this meeting, they were introduced and allowed to proceed with their 'Proposed Change to Chapter 6' to allow the use of bench top refractometer for field solids determination.

EMC is proposing that a bench top refractometer utilizing reflected light (not refractive) technology become an acceptable method for field solids measurement testing. After the presentation the morning meeting was closed to allow the members to evaluate the material. These findings will be documented and forwarded to 'Safe Firing of Black Liquor' at the end of the spring '05 meeting.

The afternoon session was open with twelve members and ten guests. The main points of discussion were Functional testing methods and ESP logic systems (Hardwired verses PLC).

Functional testing methods were surveyed and results indicated that some form of testing is currently occurring. The effort is coordinated with critical calibrations and appears to be successful.

The ESP logic system generated a question on how many systems have a hardwired panel (or hardwired/parallel interfaced DCS/PLC system) verses a true stand-alone PLC based system with redundant I/O? The survey indicates that there is only one stand-alone PLC based system in the US; while outside the US the trend is heading that way.

5. SUBCOMMITTEE REPORTS (Cont.)

5.2 INSTRUMENTATION SUBCOMMITTEE REPORT (Cont.)

A number of real concerns come to mind with this direction; 1) System Security, 2) Management of Change, 3) Are they Stand-alone, 4) If they fail what is the failure state. The bottom line – An ESP must function properly even if the Control system fails. How can these systems meet this objective? These are a few of the questions around employing this concept and they must be addressed before reasonable consideration can be given to this method. This type of system as described is not currently addressed by BLRBAC.

Next spring our morning meeting will be closed long enough to review our evaluation and findings on the proposed use of the calibrated bench-top refractometer for off line solids measurement. The meeting will be opened after the evaluation for the remainder of the day. The agenda will include incorporation of the other Subcommittee adopted interlock changes/needs with the instrument checklist, along with system security issues arising from the rapid developmental changes in technology. Finally, I would like to extend to anyone interested in becoming an active member of this Subcommittee an open invitation to check us out, we are an inclusive group, not an exclusive one.

CHAIRMAN: Dave has summarized the changes that were posted on the WEB site. It is critical that we do functional testing of safety systems in addition to calibration of the instrumentation. I would look for a motion to accept the changes? Okay. Second? Okay. Those in favor please raise your hand. Opposed? Okay, the changes are accepted.

5.3 MATERIALS & WELDING SUBCOMMITTEE REPORT – Dan Phillips

The Closed (Morning) Session of the Materials & Welding Subcommittee was brought to order by Dan Phillips and attendance was taken. A variety of documents were distributed for review and further discussion. These documents included

- the draft General Forward to the overall Materials & Welding Guideline,
- the draft General Forward to the Welding subsection,
- the full draft of the Materials & Welding Guideline in its current state,
- the original “charter” for the Subcommittee
- Meeting minutes from the previous Spring Subcommittee meeting.

Initial discussions focused on the original charter for the Subcommittee with an effort to reach consensus on an acceptable directive. This necessarily included discussions on the organization of content, the formatting within the larger framework of the overall Guideline, and reasonable expectations for producing useful information for our BLRBAC membership.

The agreed upon format for creating content was a Technical Bulletin Style of document and the compilation of these individual documents would contribute to the Materials and Welding Guideline. Prioritizing, researching and preparing recommendations and background on individual issues would help to accelerate the production of useful information for the membership. An example issue was used and discussed in defining the content sections so such that a template was produced and will form the framework for future content capture, review and presentation.

5. SUBCOMMITTEE REPORTS (Cont.)

5.3 MATERIALS & WELDING SUBCOMMITTEE REPORT (Cont.)

The committee then moved to the final editing of the General Forward to the overall Materials & Welding Guideline. Edits were discussed and incorporated as appropriate resulting in a final document to be considered by the Executive Committee.

The committee then began the final editing of the General Forward to the Welding subsection. Some progress was made until it was time for the scheduled Open Session of the Subcommittee.

Dan Phillips brought the Open Session of the Materials & Welding Subcommittee to order and attendance was recorded. Attending and designated Subcommittee Members were introduced. A brief review was delivered of the progress in the morning closed session and the adopted charter for the Subcommittee.

The meeting proceeded with a brief review of the content of the current Hand Hole Cap Welding Subsection of the Guideline. Note, this document is not in the format adopted by the Subcommittee. Next, the newly adopted template for capturing, reviewing and presenting content was discussed. The balance of the open session was devoted to the review / discussion of problems or issues raised by the attendees. Wes Kosin of MeadWestvaco questioned operator experience with economizer cracking of tube to stub butt welds. Additionally, a representative from Gulf State Paper asked about industry experience dealing with a wastage problem on the nozzle of liquor firing guns.

At the conclusion of these discussions, the General Attendees were dismissed and the Subcommittee Members returned to the work of editing the Forward to the Welding Subsection. The final editing and incorporation of changes were completed shortly after 5pm and will be reviewed and finalized at our Spring 2005 Meeting. It was also discussed that the need for progress on these documents and the Guideline was more important than an open Session. Subcommittee members agreed to communicate more between BLRBAC Meetings and to accept assignments from Dan Phillips to create draft documents that could be of the Subcommittee

All edits and final documents were given to Dan Phillips for discussion/distribution to the Executive Committee and the Subcommittee Members were dismissed.

Also, it has come up that some people were under the impression that maybe they need an invitation to join and participate as a member of the Materials & Welding Subcommittee. I'd like to express that that is not the case. You can just volunteer. It is strictly a volunteer membership. There is no personal invitation required. We need all the expertise we can get. So if anyone would like to become a member of the Subcommittee, consider yourself invited**.**

CHAIRMAN: I'd like to thank the participants of the Subcommittee for their continued help. We have a group of good people that are working hard. Their Subcommittee has been making some forward motion.

5. SUBCOMMITTEE REPORTS

5.4 PERSONNEL SAFETY SUBCOMMITTEE REPORT – Robert Zawistowski

The Personnel Safety Subcommittee met in an "open" session on Monday, October 4, 2004. There were seven members and 19 guests in attendance during the meeting.

Representation at our meeting by regular members and guests included original equipment manufacturers, ALSTOM Power and Babcock & Wilcox. Representation from insurance and insurance service companies included AXA Corporate Solutions, FM Global, and Sompo Japan Insurance. Operating company representation included Gulf States Paper, International Paper, Irving Pulp & Paper, Lincoln Pulp & Tissue, MWV Brazil, MeadWestvaco, Packaging Corporation of America, Smurfit-Stone, Visy Pulp & Paper and Weyerhaeuser. Consultant representation included Applied Technical Services, Jakko Poyry OY, RSI and Power Specialists Associates, Inc.

There were no changes in membership to our Subcommittee since the last meeting.

There have been no comments or general inquiries since the updated version of the Personnel Safety document was posted on the BLRBAC web site this summer. We remind you that this document requires input from the users in order to remain up to date.

We had one request for information regarding alarm systems in recovery boiler buildings since the last meeting. The response to this inquiry was reviewed during the meeting.

A two drum mid 1970's vintage CE recovery boiler that was converted to a power boiler suffered an auxiliary fuel explosion last year. Details of the root cause of the explosion have not been released. Photographs of the corners and buckstays of the boiler were reviewed by those in attendance. The photographs showed how the CE "zipper" corners functioned during an explosion of significant size. In this boiler, no pressure parts ruptured and there were no personnel injuries. The corners broke free at the designated design points. Although some of the corner ties severed, in general, they functioned and released as designed. The floor, nose and roof did not separate from the sidewalls. One item of surprise to the manufacturer was the extensive damage to the back end of the boiler where there was significant damage to the casing and hoppers.

Information on a failed Limitorque MOV that occurred on a high-pressure utility boiler was reviewed and discussed. Though the valve size was physically larger and operating pressure of the valve was higher than valves typically found in paper mills, there were enough similarities to make the review and discussion worthwhile. The valve that failed had been torqued shut by using a valve wrench on the handwheel of the Limitorque MOV. This was in contradiction to manufacturer's operating instructions. This action was deemed responsible for creating cracks in the valve stem housing. When the valve was eventually opened, the housing completely failed ejecting parts that killed a veteran operator.

5. SUBCOMMITTEE REPORTS (Cont.)

5.4 PERSONNEL SAFETY SUBCOMMITTEE REPORT (Cont.)

Information that we reviewed indicated that cracks developed in the bolt circle of the housing as a result of excessive stem thrust. It may be possible to detect these cracks by visual, PT or MT test methods. At this point in time we have heard there has been one Limitorque MOV failure within the paper industry. As a result of the catastrophic failure in the utility industry we suggest the following:

Ensure that operators are properly trained in hand wheel operation of MOV's

Make sure that operators understand the MOV operation and the potential hazards

Follow manufacturer instructions with regard to manual and automatic operation of the valves

Do not use any leverage increasing tools or devices on the handwheels to either open or close these types of valves

Perform routine preventative maintenance per manufacturer instructions

Inspect the housings of any MOV's and perform PT or MT testing, specifically around boltholes of the stem housing

Ensure that limit and torque settings are adjusted to manufacturer specifications.

This past year an operator was injured when hot black liquor sprayed onto him while disconnecting a liquor gun. Subsequently, the man was treated at a local hospital and released. Two days later, the man was readmitted suffering from chemical burns that had not been completely neutralized. In our meeting we discussed communication between mills and emergency response groups such as the fire department and hospitals. The mills that were represented at our meeting all had some form of communication with rescue and hospital people in their area. It was generally agreed that the better the rapport with hospitals and doctors before hand, the easier it is to communicate during an emergency. Within the Personnel Safety document there is brief mention of this important topic. We will be adding some language to reinforce the need to communicate important information to hospitals and doctors before and during an emergency as well as providing follow-up treatment.

We have started to develop general guidelines for water washing recovery boilers following a normal shutdown. General information and concerns were solicited from the group. Over the winter a draft of guidelines will be started and a review process will be initiated during the Spring 2005 BLRBAC meeting.

5. SUBCOMMITTEE REPORTS (Cont.)

5.4 PERSONNEL SAFETY SUBCOMMITTEE REPORT (Cont.)

In closing, while there were many guests from operating companies at this meeting, there is a high percentage of non-user representation on our Subcommittee membership. Personnel Safety receives some of its best input from operating people in the development of our guidelines. We would like to encourage more users of recovery boilers to become members in this and other BLRBAC Subcommittees.

Along with what Dan said earlier about becoming a Subcommittee member, it is a pretty easy to do. You do not need an invite to join our committee either. If you wish to join, my e-mail is on the WEB site. Feel free to contact me. Certainly while we do meet every six months because Personal Safety is a very important issue, we realize in today's economy that members can't always get down for every single meeting. We do have members that show up when they can and that is acceptable to our group as well. So if you can't make it to every single meeting, be assured that you are still welcome to join our group.

5.5 PRESS RELEASE & PUBLICITY SUBCOMMITTEE REPORT – Craig Cooke

No report submitted at this meeting.

CHAIRMAN: Craig does make the effort to distribute information on BLRBAC to various publications. So if you have a favorite publication that doesn't know about BLRBAC, let Craig know.

5.6 SAFE FIRING OF AUXILIARY FUEL SUBCOMMITTEE REPORT – Dave Streit

No report submitted at this meeting.

5.7 SAFE FIRING OF BLACK LIQUOR SUBCOMMITTEE REPORT – Len Erickson

The closed meeting of the Safe Firing of Black Liquor Subcommittee was held in the morning with nine of eleven members present. An additional 54 guests attended the afternoon open meeting. The following items were discussed and acted on during the sessions.

a) The Spring 2004 Minutes were reviewed and approved.

b) The proposed changes to SFBL were approved along with comments from the executive committee and the general membership. The intent of the revision is to provide safe guidelines for using the liquor guns to wash the lower furnace during a water wash. Previous to this revision, locations that wanted to use the liquor sprays to wash the lower furnace had to jumper the gun door interlocks or other logic.

5. SUBCOMMITTEE REPORTS (Cont.)

5.7 SAFE FIRING OF BLACK LIQUOR SUBCOMMITTEE REPORT (Cont.)

A number of grammatical changes were submitted by the Executive Committee, which do not substantively change the intent of the revisions.

Several comments were received noting that Figure 5 does not reflect the piping arrangement for "High Solids" systems. SFBL is going to proceed with a separate revision that will add a figure and explanation for systems that use pressurized storage tanks and fire at solids above 76%.

c) The request by Electron Machine to change to Chapter 6 to allow the use of a bench top refractometer for field solids determination was forwarded to the Executive Committee and Instrumentation Subcommittee at the spring meeting. The two subcommittees will meet to discuss this subject further.

d) The errors that had been found in the on-line version of SFBL have been corrected and the document was re-posted on the BLRBAC web site with a March 2004 revision date. Please check to be sure you have the correct version.

e) One request for clarification was received since the spring 2004 meeting. A location asked if it was permissible to use a time delay to prevent boiler tripping when either the steam or Black Liquor flow dropped below the 30% trip limit for a short period of time.

f) The subcommittee is requesting that the ESP Subcommittee forward the reports of dissolving tank incidents to the SFBL Subcommittee. Chapters 9 and 10 of the Safe Firing of Black Liquor Recommended Practice address smelt spouts and dissolving tanks. The subcommittee would like to review the incidents to determine whether or not the conditions leading to the dissolving tank explosions are addressed.

g) It was requested that SFBL have a procedure to determine if the smelt bed is safe to begin water washing and washing in the lower furnace. The committee has agreed to develop this based on the procedure contained in the Post ESP document.

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

i) K-Patents presented their digital solid state Refractometers for black liquor and green liquor after the open meeting.

Contacts:

- Contact Len Erickson at 208-384-4933, e-mail lenerickson@boisepaper.com, or Fax 208-384-7637, with questions or comments, Or
- Contact Mark Sargent at 513-248-6086, e-mail mark.sergeant@ipaper.com, or Fax 513-248-6679 with questions or comments.

5. SUBCOMMITTEE REPORTS (Cont.)

CHAIRMAN: As far as I know, this will be our last vote for today. Could I have a motion to vote on this. Thank you. Could I have a second? Thank you. All those in favor please raise your hand. All those opposed. The changes as noted have been accepted.

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

The Subcommittee held an open session Monday morning with five (5) members and twelve (12) guests. As an alternate to John Lisenby of International Paper, we were pleased to welcome back our previous Chairperson, Jerry Vuoso of International Paper's Risk Management Department to work with us in John's stead. All absent members sent there regrets prior to the meeting.

At the start of the meeting there were eight active members of the Subcommittee. Two volunteers on Monday raised that number to ten, and I am especially pleased that both new members represent users and in fact are Recovery Superintendents. Don Lacey of Eurocan in Kitimat and Joe Goss of Delta Natural Kraft in Pine Bluff, Arkansas are welcome additions to the subcommittee.

One of our functions, now that the document is complete, is to report on incidents involving fires in Cascades and Cyclones. No incidents involving fires in Direct Contact Evaporators have been reported to the subcommittee since April of this year, so we have none to bring before you today. We hope that is a good sign.

INCIDENT QUESTIONNAIRE

A new Incident Reporting Questionnaire will be available soon on the website. The new form has been reduced to three pages, and will be available as a separate document. We hope that this will make it easier to report fire incidents and in the end provide better information to BLRBAC.

DOCUMENT REVISIONS

A number of minor revisions are proposed to the existing document. They are all offered to clarify the document and do not represent substantial changes in the text. All of these changes were presented to the Executive Committee for consideration. One change was made in response to two reports that the text was being misinterpreted to require water sprinklers in vertical runs of ductwork. The subcommittee is clear that this was not the intent of the text, and reinforces that with added text.

In a review of the present document we found that we may be requiring indication capability and tripping logic on High-High Temperatures that is not matched in the other documents. We will be working with the Chairs of the other subcommittees to make sure that we are consistent.

NEXT MEETINGS

With no more business to discuss or questions from the visitors, we adjourned and did not meet in the afternoon. Unless there are questions requiring the review of the subcommittee or incidents to report, the subcommittee will not plan a meeting in April 2005, but will continue to meet each October. Thank you for your attention.

5. SUBCOMMISUBCOMITTEE REPORTS (Cont.)

5.9 WASTE STREAMS REPORT – John Rickard

The Waste Streams Subcommittee met in closed session at 8:00 AM on October 4, 2004 with 11 members present. We had one new member present, David Stringfellow from IP, replacing Wayne McIntire. We had one member resign.

Chapter 6, Blending Liquid Waste Streams with Black Liquor, has been re-reviewed by the Executive Committee, revised according to their comments and resubmitted. If the resubmittal is adequate then it will be posted on the BLRBAC website for comments by the entire committee.

An issue brought to the subcommittee's attention concerns continuous digester chip bin vent gas, which is collected when chips are pre-steamed in the bin. In our guidelines this NCG source is considered a DNCG stream and it is assumed to be collected along with other DNCG sources. However, some mills collect and thermally oxidized this stream separately from the DNCG stream. We do not have guidelines for chip bin vent gas only and the existing DNCG guidelines should not be directly applied to chip bin vent gas. The specific problem with the chip bin vent is that upset conditions can occur resulting in the concentration of turpentine and other hazardous substances possibly exceeding the lower explosive limit. DNCG equipment such as fans for transport and heaters for decreasing the relative humidity should not be used on chip bin vent gas alone.

The subcommittee decided to change direction and work on guidelines for chip bin vents rather than liquid waste streams in dedicated burners. After the chip bin document is in draft form, the subcommittee will decide if it will be another section in chapter 4, DNCG; or if it will have its own chapter.

There are many questions to be answered concerning chip bin vent gas:

- What is duration of upsets of the chip bin and resulting gas concentration?
- Can existing waste stream guidelines be used?
- Is a dedicated nozzle required?
- Should a continuous igniter be used?
- What minimum velocity is required?
- What elevation in the furnace is best for introduction of chip bin gases?
- What permissives are required to introduce chip bin vent gas into a recovery furnace?

To create guidelines for the chip bin vent gas alone, we need more information about the gas stream and its constituents, both when the bin is operating normally and when it is in an upset. To acquire this knowledge, the following tasks were assigned in preparation for the spring meeting:

- Preparation, distribution and summary of questionnaire: John Rickard
- Draft of introductory section for chip bin vent gas incineration: Hank Beder, Paul Seefeld
- Arrange a presentation by an LEL detector company for the spring meeting: Hank Beder
- Investigate how much gas of a given constituency can be injected into a furnace before there is a hazard, and what is the impact of steam from an ejector on chip bin vent gas: Bentley Sherlock
- Can CFD modeling of typical recovery furnaces help answer some of our questions? Ned Dye

5. SUBCOMMISUBCOMITTEE REPORTS (Cont.)

5.9 WASTE STREAMS REPORT (Cont.)

The afternoon session convened at 1 PM in an open meeting. There were 11 subcommittee members present and 7 guests. We reviewed our morning meeting with our guests and quizzed them, searching for experience with chip bin vents. We then continued discussion on chip bin vent collection methods until it was clear that we needed more data to continue development.

The Waste Stream Subcommittee was re-instituted in 1998 and has been writing its guidelines since that time. Our outstanding work items are the chip bin vent, firing liquid waste streams in a dedicated burner, and further down the line, incinerating the dissolving tank vent gases. Following completion of writing guidelines, we will review the guidelines for updating. At every BLRBAC meeting the Waste Streams Subcommittee meets in closed session in the morning to continue creating guidelines. The afternoon session is open to allow interested persons to participate. The Subcommittee often gains as much from the guests as they gain from listening to us. The afternoon agenda varies, with presentations concerning equipment that applies to the topic at hand frequently being provided. The afternoon always has continued discussion from the morning meeting. If the subject of thermal oxidation of waste streams in recovery boilers is interesting to you, and you are willing to meet with us on Mondays to work on guidelines, then our subcommittee wants you on our team. Please come to the spring-closed meeting, 8AM, and volunteer to join. Contrary to rumors, there are no initiation rites.

CHAIRMAN: In additions to Subcommittee Reports, we traditionally also ask a few other organizations that impact us in the area of recovery boiler safety to provide a short update on what has been going on in their area. To start off we have the AF&PA Recovery Boiler Report by Tom Grant.

6. AMERICAN FOREST & PAPER ASSOCIATION 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 six non-AF&PA member companies. We are happy to announce that three companies joined the Program within the past few months (Koch Cellulose, Potlatch and Tembec). With these additions, the AF&PA Program represents nearly 99% of the total sulphate pulp produced in the US. We will continue to encourage those other three companies with recovery boilers, who are not in the Program, 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: After nearly a record number of 148 attendees at the Operational Safety Seminars in 2003, we counted 143 attendees this year. We probably would have set a record this year, but had a few last minute cancellations due to upsets at the mills. In 2002 we reached the lowest attendance. This was prior to the two explosions that year. There appears to be more value placed on the training received at the seminars, especially for newer people in the operation and maintenance of the recovery boilers. We have had over 2,300 people attend the seminars since they were started in 1985. As long as the mills continue their interest in the Seminars, the Committee will continue to sponsor them. We are planning to conduct three seminars in 2005.

6. AMERICAN FOREST & PAPER ASSOCIATION REPORT (Cont.)

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

Training Program: The Committee is working with Power Specialists Associates in converting the AF&PA Recovery Boiler Training Program to use for computer-based training (CBT). We were hoping to have this in place before this meeting, but should have it completed shortly. Notices will be sent as soon as it is completed.

Damage Mechanism: At long last, the Damage Mechanism project sponsored by the R&D Subcommittee through the Pressure Vessel Research Council of the Welding Research Council to create a document on damage mechanisms fit for service has been published. This document defines and describes various damage mechanisms for API 579. It is listed as Bulletin 488 and has been distributed to the Program members.

Overheat Floor Tube Failures: The R&D Subcommittee is encouraging the publication of studies related to overheat floor tubes in recovery boilers. Work had been done in this area by various sources, but had not been published. It is evaluating the need for further research into the study "Overheat Floor Tube Failures in Chemical Recovery Boilers." You may recall that AF&PA sponsored the study to investigate the experiences into these failures.

Non-destructive Technologies for Detecting Water-side Deposits: With the completion of Phase 1 of the study to identify potential non-destructive technologies for detecting water-side deposits in recovery boiler furnace wall tubes, sponsored by the R&D Subcommittee. AF&PA is sponsoring Phase II to investigate nine technologies to possibly answer this problem. The Subcommittee will work with and/or a consortium in this project. The AF&PA Advisory Group of members, vendors and manufacturers will oversee this project.

Joint Seminar with AF&PA and BLRBAC Planned: AF&PA and BLRBAC are sponsoring a joint seminar for water treatment to be held after the April BLRBAC meeting. Mr. Conley of Bowater is heading up the Task Group for the seminar. Details will be distributed in the near future.

Agenda 2020: AF&PA is continuing to work with the US Department of Energy in the Agenda 2020 program to develop projects with a vision for the future. There are a number of projects currently underway with funding from DOE including gasification.

Study for Review Analysis of Economizer Tube Failures: This study was undertaken due to the recent increased number of economizer leaks. AF&PA is sponsoring a review and the analysis of the economizer failures. All US mills and Canadian mills of member companies were sent a survey to complete in July. The survey requested information and experience of the economizer for the purpose of understanding the causes and define criteria for design, performance, construction and operation. It also will try to identify methods and/practices to prevent occurrence.

6. AMERICAN FOREST & PAPER ASSOCIATION REPORT (Cont.)

A survey form was also sent to manufacturers to obtain a listing of economizers installed after 1980, contracted as replacements or part of a boiler retrofit, and those removed from service after 1990, regardless of start„up date. At this writing, we have received reports from about 40% of the mills. If your mill has not reported as yet, please see that the survey form is sent to Jack Clement soon. We are hoping to complete Phase I of the study at the end of December and then complete Phase II of the study about four months later.

Other Research Projects Under Review: The Committee is also reviewing proposals to study 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. Other projects being considered involve**:**

- High Temperature Protective Coatings to Simplify Inspection of Wall Tubes in Chemical Recovery Boilers

- Testing of Ribbed Tubes

The Subcommittee is also finalizing the updates to the Audit Guidelines and the Guidelines and Checklist for new recovery boilers. We hope that have these completed shortly and distribute to those interested in these publications.

Annual Meetings and Conferences: Annual Recovery Boiler meetings and Conference will be held February 8th and 9th in Atlanta. The Conference is open to all operating companies, insurers and manufacturers. The presentations will include 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 had good attendance at this years Conference and hope that many of your will plan to attend next years Conference. Thank you for your attention.

7. TAPPI RECOVERY BOILER SUBCOMMITTEE REPORT – Karl Morency

No report submitted at this meeting.

8. NATIONAL BOARD OF BOILER & PRESSURE VESSEL INSPECTORS' REPORT – Bob Sullivan

In my April report, I announced that a new edition of blowoff systems would be published. Formerly called “Rules and Recommendations for the Design and Construction of Boiler Blowoff Systems”, the name has been changed to “A Guide for Blowoff Vessels”, NB-27 Rev. 2. It is now available on our web site. The document is downloadable and free of charge.

8. NATIONAL BOARD OF BOILER & PRESSURE VESSEL INSPECTORS' REPORT (Cont.)

The National Board web site has had a makeover and the format is redesigned to help users locate information with greater ease. The new changes (launched in August) are in response to feedback from inspectors, manufacturers, insurance companies and equipment owners/users.

Other than the new look, the site's most noticeable change involves asking visitors to register. The registered visitor is permitted access to purchase various published materials, register for training courses, and the General Meeting. Registration also provides a secure process for administering training exams and identification for those enrolled in programs and courses.

Inspectors have a new resource available specifically for them—*Inspectors' Corner*. Tis portion of the site features events of interest to inspectors, career-related documents, inspector-focused topics of discussion, and guides for assisting with inspections. Inspector Guides now online provide pointers on inspecting cast-iron boilers, pressure relief devices, water level controls and devices, and operating controls.

For questions about the NBIC or a particular ASME Code a link to "Code Questions?" has been added under the Features section. Here an extensive, detailed directory of National Board staff allows visitors to locate the appropriate staff member who is most knowledgeable about the particular document. The staff member's name, title, and telephone number are provided. The staff member can also be emailed directly from the site by clicking on the name.

NBIC Activity

The last meeting of the NBIC Committee was held in Milwaukee, Wisconsin, on August 19, 2004. I do not have any particular items that are unique to Black Liquor Recovery Boiler to report; however, for those who wish to review the meeting Minutes, these will be posted on the National Board web site by this Friday.

The next meeting of the NBIC Committee will be held in New Orleans, Louisiana, on January 11-13, 2005.

The interpretations also are not specific to Black Liquor Recovery Boiler; they too can be found on the web site.

9. WESTERN CANADA BLRBAC REPORT – Bob Norton

Atlanta report on the spring 2004 meeting held in Cowichan Bay, B.C, on April 6, 2004.

Twenty-eight members attended the meeting and a tour was held of the NorskeCanada facility.

9. WESTERN CANADA BLRBAC REPORT (Cont.)

Incidents

There were 8 incidents reported at the meeting

- Cracked line on the ESP drain line from bottom of generating bank header
- Crack in boiler screen tube at membrane weld termination
- Pinhole leak on cold side of rear wall tube below spout box
- Economizer tube leak on a previous overlay repair
- Economizer tube plug leak
- Longitudinal leak in furnace screen platen at tube cut line
- Economizer tube leak
- Crack in wall tube located at the intermediate header

Of the eight leaks, three were ESP's with the other 5 done in an orderly shutdown. Operator walk downs picked up all eight of the incidents.

Technical Papers presented were,

a) Alstom- Simulation of spray characteristics of black liquor
b) Andritz-Scrubbers-What's Different
c) Kvaerner-Bubbling bed boilers
d) B&W-design and development of new primary ports
e) Combustion and emissions of a hog fuel traveling grate with the addition of coal

The fall meeting will be held in Vancouver, B.C. on November 5th, 2004

CHAIRMAN: We would like to thanks the people in Canada for sharing their Incident Reports with us.

10. ACTIVITIES OUTSIDE NORTH AMERICA REPORTS

10.1 REPORT FROM FINLAND

Report from the Finnish Recovery Boiler Committee

The Finnish recovery boiler committee celebrated its 40th anniversary this year. The highlight of this anniversary was the 40th anniversary conference held at Haikko Manor in Porvoo/Finland. Almost 200 guests from around the world took part in this conference, which was a combination of high quality presentations and a joyful celebration. The committee has published the proceedings of the conference.

10. ACTIVITIES OUTSIDE NORTH AMERICA REPORTS (Cont.)

10.1 REPORT FROM FINLAND (Cont.)

The 40th year of joined research and shared experience in the Finnish pulp and paper industry is also highlighted by a large research project, exploring the future of recovery boilers. At the same time the world's largest recovery boiler has begun commercial operation.

Research projects

Rising electricity costs, increasing demand for CO_2 neutral energy production and tightening environmental restrictions force the boiler users as well as the manufacturers to improve the technology in existing and new boilers. Higher pressures and temperatures aim at increasing power output. The main research project is investigating how the operation values of recovery boilers can be improved without increasing risks of corrosion and erosion in boiler materials.

10. ACTIVITIES OUTSIDE NORTH AMERICA REPORTS (Cont.)

10.1 REPORT FROM FINLAND (Cont.)

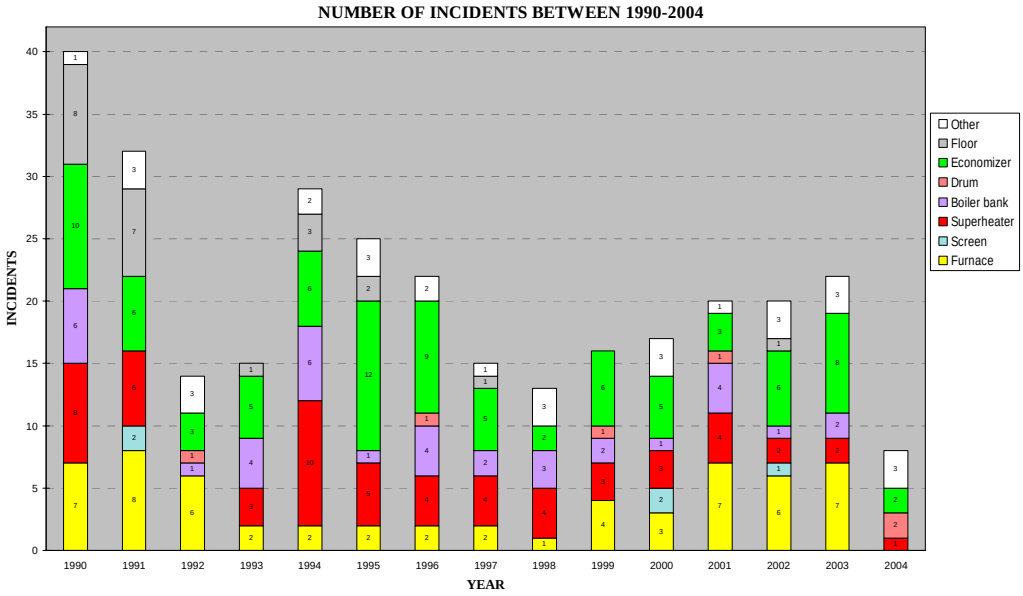
Other projects are focussing on improvements in operations safety and the environmental issues. The main subjects are:

- Recover Boilers in the future
  - New materials
  - K / Cl removal
- Cleaning and reuse of precipitator ash
- Protection of recovery boiler workers against hot chemical splashes
- Best available technology for Recovery boiler instrumentation
- Soap extraction

Already published are recommendations for recovery boiler automation and combustion of odorous gases that will be translated into English to make them available also for pulp and paper industry outside of Finland.

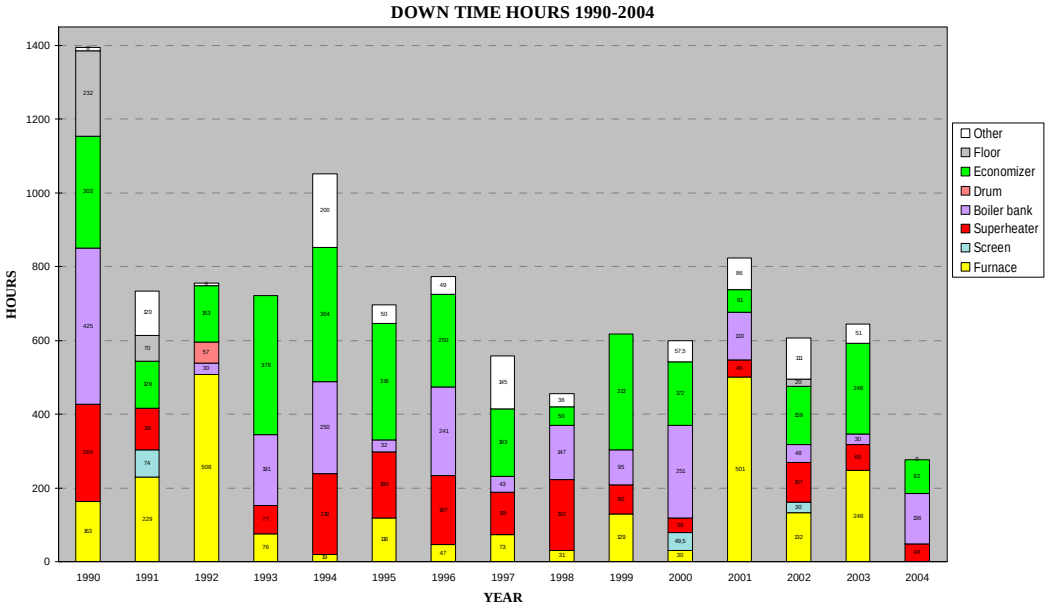
Incidents

Through the end of September eight incidents have been reported in Finnish recovery boilers for 2004. The incidents were mainly small leaks in economizers, the boiler bank and superheaters. The leaks led to one emergency shut down. The statistics on the incidents and the shut down hours since 1990 are illustrated in the following two figures.



10. ACTIVITIES OUTSIDE NORTH AMERICA REPORTS (Cont.)

10.1 REPORT FROM FINLAND (Cont.)



A more critical accident happened in April 2004 when the dilute odorous gas system exploded at one of our pulp plants. Fortunately nobody got injured. The explosion caused significant damage to the gas system. It is believed the incident was caused by high fluctuations in the quantity, pressure and temperature of the chip silo gases, which are mixed with the dilute odorous gases before being incinerated. The exact reason for the explosion is still under investigation.

Contact information

http://www.soodakattilayhdistys.fi

The secretary of the Finnish Recovery Boiler Committee

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11. OPERATING PROBLEMS SESSION REPORT – Karl Morency

OPERATING PROBLEMS SESSION REPORT – Karl Morency

The following is a summary of the discussions from the 2 hours Operating Problems Session on Tuesday afternoon.

1. Floor Tube Failures – There have been 5 floor tube leaks in units with flat floors during the previous six months. It is important for mills with decanting hearths to review these incidents with their operators and make sure they are aware of the symptoms of this type of failure so that they can recognize when the have a floor tube leak and take timely action (initiate an ESP).

2. Catastrophic Tube Failures/Ruptures – Catastrophic tube failures require immediate initiation of an ESP by the operator to minimize the potential for a smelt/water explosion. Operators should receive training on recognition of catastrophic tube failures to include training on the capabilities of leak detection systems to recognize and alarm these types of tube leaks. Frequent refresher training and review of actual incidents is recommended. The AF&PA Safety Seminars are an excellent means of providing this training.

3. New Methods or Materials for Preventing Near Drum Corrosion of Generating Bank Tubes

- Both B&W and Alstom offer material solutions for protecting new generating bank tubes from near drum corrosion
- Honghi Tran, University of Toronto, has written a paper identifying operating conditions that increase the susceptibility to near drum corrosion.
- There are some things that can be done with sootblowers to reduce the potential for near drum corrosion – increase the distance between the sootblowers and the drum and convert to oscillating blowers that are set up so that they don't blow directly on the drum.

4. Use of Time Delay on Low Black Liquor Flow or Low Steam Flow – Low black liquor flow is an indication of potential blackout conditions. A number of mills reported use of time delays and one of them indicated that they used a 5 second delay. The time delay is intended to prevent nuisance trips caused by a temporary reduction in steam flow when steam demand from the mill drops quickly causing an increase in the header pressure and a momentary decrease in steam flow.

5. Alternatives to TAPPI T-650 OM-99 – One mill reported substituting a glass fiber pad for the sand that is called for in the TAPPI test. This was reported to work very well.

6. Use of Green Liquor Circulating Pumps on B&W Boilers – At one time the B&W standard was to supply both steam shatter jets and green liquor recirculation. Later, the green liquor recirculation was eliminated and only steam shatter jets were supplied.

7. Problems with Spouts Due to High Viscosity Smelt

- Honghi Tran, University of Toronto has done some recent work on this subject and has published a paper. Smelt viscosity is a function of smelt chemistry and temperature.
- Unburned carbon in the smelt is believed to contribute to "jelly rolling".
- Dead load may also be a factor. Dead load lowers the BTU value and decreases the combustion temperature which can decrease smelt temperature and increase the viscosity. It can also change the smelt chemistry.

8. Preventing Superheater Corrosion/Erosion

- Alstom has had good experience with chromized T-22 tubing in the hot lower bends in primary, intermediate, and final superheater pendants.
- One mill reported that chromized T-22 held up better than plain T-22 until the chromized layer was penetrated and then rapid corrosion occurred. A second mill reported similar experience.
- One mill increased attemperator spray flow to reduce outlet temperature from 900° F to 850° F. This was sufficient to eliminate the corrosion problem.
- Metal spray increased service life by 4 times over bare carbon steel at one mill.
- One mill has used TP-347 tubes operating at 1500 psi/800F for 20 years with no problems.
- Kvaerner reported success with T-91, composite, and stainless.
- Stainless superheaters are susceptible to chloride stress corrosion cracking if water carries over from the drum or if low quality water is used to fill the superheater for hydro.

9. Severe corrosion on generating bank sidewall tubes at buckstays on cold side

- One mill has experienced severe corrosion in two areas behind buckstays in a 20 year hold boiler. It is very difficult to find without using an internal probe.
- Another mill reported a similar problem on a CE unit. The problem was also found at a channel below screen tube headers.

10. Use of automatic blowdown valves as part of drum level control strategy

- One location found it very successful on a power boiler. The blowdown valve opens automatically on high drum level.
- Other mills reported that they use the blowdown valves but they are opened by the operator.

11. Raising elevation of spouts on sloped floor unit to increase smelt pool in furnace

- This has been done successfully to even out smelt spout flow.
- Another mill reported that raising the spouts 3”-4” eliminated cracking around stack studs.
- Another location raised the spouts to create a small smelt pool to help reduce jelly rolling. The bottoms of the spout openings were originally tangent to the slope of floor. The spouts were raised 6 inches and it made a significant improvement.

12. Limitorque valve operator inspection results

- Progress Energy issued a safety alert about a drive housing failure (not the valve body) that resulted in an operator fatality. A valve wrench had been used to ensure tight shutoff following motorized closing. Several attempts to re-open the valve using the Limitorque motor were unsuccessful. When the valve finally did come off the seat, the reactive force on the valve stem and gear reduction unit resulted in catastrophic failure of the gear housing. The excessive force from using a valve wrench on the gear drive caused cracking of the housing that weakened it and resulted in failure. **Valve wrenches should not be used on any gear driven valve operators.**
- A similar event was reported to have occurred at one mill.
- It is recommended that the housings on gear drive valve operators be inspected for cracking. The housing can be inspected for cracks without disassembly of the drive.

- Bob Zowistowski requested feedback from anyone finding problems.
- One mill with these drives on non-return valves did an examination and found no problems on 14 year old valve operators.

13. Separate collection and incineration of chip bin vent gases rather than blending with HVLC gases

- This subject was raised by the Waste Streams Incineration Subcommittee. There are mills that have separate systems for collection and incineration of chip bin vent gases. The concern is that steam breakthroughs in the chip bin can result in the vent gases going from the non-explosive range to the explosive range so special precautions are required for the design and operation of these systems. The Waste Streams committee intends to write guidelines and is looking for input from any mills that already have experience with these systems.
- There was no feedback from attendees.

14. Torch design for clearing plugged smelt spout openings

- A rosebud tip with low heat intensity is recommended (weed burner tip purchased at local hardware store)
- The boiler should be purged before using a torch to clear spout openings. Using gas from a takeoff downstream of the burner SSOV's is a good method for doing this.

15. Use of restrictor plugs in smelt spouts to prevent heavy run-off after a plugged spout is cleared.

- The Mead-Westvaco mill in Chillicothe has a swing arm system operated from the floor above. They have been invited to make a presentation at the next meeting. The manufacturers appear unwilling to offer a design for automatic/remote operation.
- Other locations have used restrictor plates mounted on the end of a rod that is inserted into the opening and dogged in place so operators don't have to stay in the area.

16. Automatic shut down of liquor gun pumps as part of the ESP procedure

- The BLRBAC ESP procedure lists this is an optional function. Most mills indicated that they do shut down the liquor pumps as part of the ESP.
- One location does not shut down the liquor pumps because of the need for liquor flow to prevent clogging up the cascade evaporators. They have an automatic valve to shut off flow to the liquor guns in addition to the divert valve.

17. Problems conducting chill and blow procedure on a CE boiler – a mill reported that they have a problem with slag blocking the primary air ports when they conduct a chill-and-blow.

- One mill advised that they do not run the sootblowers in the superheater area until after the chill-and-blow is done and the boiler is back up. This procedure is effective in removing the deposits, but they don't get accumulation in front of primary air ports.
- Another mill reported that they use the gas burners to try and prevent accumulation of slag if from of the air ports.

18. Options for removing condensate from sootblower systems - one location uses an automatic

condensate control system with valves that open for 60 seconds when thermocouples indicate the presence of condensate in the sootblower piping

19. Dedicated training coordinators for the utility department?

- Five locations report having them.
- One company policy is to have two dedicated training coordinators for each mill. There was significant resistance initially at some of the mills, but now have about 80% compliance. Training has produced good results. Training new hires after initial training rollout is more cost effective with CBT.

20. Annual training of 8 or more hours per year per operator

- Several mills indicated that they have this as a requirement
- One reported 6 hours.
- One company requires 8 hours per quarter.

21. A survey was taken of the age of recovery boilers:

50 years or older - 1
45 to 50 years - 7
40 to 45 years – 3
35 to 40 years – 12
30 to 35 years – 12+

22. Mill experiences with recent hurricanes

- Ivan: The mill was late in starting preparations – only 24 hours notice was given to employees. The intent was to run through with enough people to permit on-site resting. Plan was to keep turbines, power, and water going to permit shedding outside power ties. They ended up being about 6 people short and decided to shutdown. The turbines were kept running to keep motors energized and warm and prevent water damage. Two transformers got wet – one required repair and the other was heated and dried out. There was very little wind damage. Maintaining electric power was important. Radio, land phone, and cell phones went down except for Southern Link. Two way radio communication was the only means of communicating with off plant personnel. Learnings: Use more advanced planning and arrange for families to come into the facility to ensure adequate manning.
- Ivan: Report from a mill 60 miles inland. The mill ceased operations and battened down. Kept one power boiler and turbine-generator on-line. Only siding damage was suffered. About 25 people remained at mill, but debris isolated mill from the surrounding area. Plant personnel assisted with highway cleaning.
- Ivan: Florida – 60 miles inland. Planned and executed shutdown. About 25 people were retained at the mill. Cell phones worked. The mill eventually went black because of limited in house power generation. There was little damage to the mill – some roof and siding damage. The biggest concern was people's families and their homes.

- The mill made a late decision to shut down and leave only recovery and power boilers and turbines on line and break ties with Alabama Power Co. All unnecessary personal left. The mill ran partly through the storm until river pumps were lost and then it went black. Start-up had to wait for power restoration. The big problem was clearing debris around employee homes and from roads to the mill. One family was killed by asphyxiation from putting generator in house. They were afraid it would be stolen if it was left outside.

23. Conversion from weld-in sleeves to port casting for airports.

- About 6 mills have done this.
- Repair of welded sleeves was always on the critical path during shutdown.
- Cracking in the large crotch plates was a recurring problem.
- Sleeve burnout in ports required frequent repair and often included removing the windbox.

24. Suggestions for improving Operating Problems Session – good audience participation (asking and/or responding to questions) is the key to having a successful Operating Problem Session.

25. Covering floor tubes in sloped floor recovery boilers for protection during start-up

- Almost all mills start with no protection. This is true for both studded and composite floors.
- One mill covers the studs with refractory but it normally doesn't last long.
- One mill uses refractory on the floor and lower walls and reported that it stays on the walls.

26. Recovery boiler operation during severe earthquake

- One mill ran through the Nisqually earthquake. They felt the swaying but no structural damage was experienced.
- In another mill (same earthquake), the boiler swayed enough to hit the structural steel. There was no serous damage.

CHAIRMAN'S CLOSING COMMENTS:

TIME & PLACE OF NEXT MEETING: The next meeting will be held on April 4, 5, & 6, 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 at 10:00 a.m. Everyone have a safe trip home!

TECHNICAL SESSION:

"Mutual Inductance Bridge Technology for Boiler Tube Inspection"
presented by Jeremy Banks & Steve Cooper of Avistar, Inc.

"Description of an Air System Upgrade on a Mill in South America"
presented by Anothony Ross

Fall 2004 - 1	
Location:	**Norske Canada, Crofton, British Columbia**
Unit:	No. 4 Recovery Boiler. ABB Contract No. C-88105. Startup 1991.
Size:	4.0 million ppd solids. Steam flow at 587,000 lb/hr. Operating at 600psig & 750F. Design at 800 psig. Single drum boiler / large economizer
Incident Date:	May 11, 2004
Leak/Incident Loc:	**Economizer** – 1/8" pinhole leak in hand-hole on upper economizer header external to boiler
Downtime hrs due to leak/total:	Total downtime 26 hours
ESP?	No
Classification:	**Non-critical**
How discovered:	Operator noticed steam flowing from behind lagging on top of economizer
Leak detection:	Nalco combination Mass Balance and Trasar system installed in 1999 not in operation at time of incident
Sequence of events:	After observing leak, liquor was pulled and the bed burned out
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Installed new hand-hole fitting after removing old cap and dressing the surface
Root cause:	Porosity/slag inclusion on hand-hole seal weld
Future prevention:	NDT of welds on hand-holes during next planned outage
Last full inspection:	Inspected January 2004. Acid cleaned in 1996 (fill and soak)

Fall 2004 - 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 / large economizer . Kvaerner economizer installed 1995/1996
Incident Date:	December 30, 2003
Leak/Incident Loc:	**Economizer** - Leak at seal weld of a feeder (supply) tube to the boiler casing. Tube is 4th feed tube header from left sidewall on the front (hot) economizer north header
Downtime hrs due to leak/total:	Total downtime 29.5 hours
ESP?	No
Classification:	**Non-critical**
How discovered:	Water observed in ash conveyor
Leak detection:	Acoustic leak detection system on operation did not detect nor confirm the leak
Sequence of events:	Wet salt cake was observed in conveyor and crew proceeded to put in oil burners and slowly remove liquor guns. With liquor out, doors opened 6th floor to expose lower headers- No water observed. Opened doors to expose front economizer bottle headers. Water seen leaking from tube near LHSW.
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Defect ground and welded
Root cause:	Fatigue failure
Future prevention:	Continue to evaluate temperature measurements. Evaluate cost to replace all rear bank lower inlet headers.
Last full inspection:	Unit inspected March 20, 2003, and acid cleaned Sept, 25, 2002

Fall 2004 - 3	
Location:	**MeadWestvaco, Charleston, South Carolina**
Unit:	B&W Contract No. PR-206. Startup 1984. Kvaerner retrofitted large economizer 1995/1996
Size:	4.5 million ppd solids. 691, 000 lb/hr steam. Operating at 1450 psig & 880F. Design at 1725 psig. 2 drum / large Kvaerner economizer .
Incident Date:	March 5, 2004
Leak/Incident Loc:	**Economizer** – longitudinal crack initiated on internal tube surface at 8th tube from rear wall of 20th upper header from right sidewall. Feedwater from Deaerator enters module at lower headers. Tube that leaked had been repaired 12/13/2001 at exact same location.
Downtime hrs due to leak/total:	Total downtime – 44 hr- 10 min
ESP?	No
Classification:	**Non-critical**
How discovered:	Boiler Operator observed water in the cold economizer ash conveyor
Leak detection:	Acoustic leak detection system on operation did not detect nor confirm the leak
Sequence of events:	Mechanic repairing sootblower notified operator of an internal obstruction limiting sootblower penetration. Operator inspected hopper and observed water in hopper. Started to remove liquor burners and insert oil burners for an orderly shutdown.
Bed cooling:	No enhancement
Wash adjacent tube:	Yes. 19th header extensively thinned by water leaking from 20th header.
Repair procedure:	The 2 tubes were plugged in the 19th and 20th headers respectively.
Root cause:	Unknown B&W Service Bulletin identifies similar fatigue cracking resulting from cycling temperature of feedwater
Future prevention:	Continue to evaluate temperature measurements. Changed boiler startup procedure to reduce temperature cycling. Install CS gussets on plugged platens. Evaluate cost to replace all rear bank lower inlet headers.
Last full inspection:	Unit inspected March 20, 2003, and acid cleaned Sept, 25, 2002

Fall 2004 - 4	
Location:	**MeadWestvaco, Charleston, South Carolina**
Unit:	B&W Contract No. 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 / large economizer
Incident Date:	April 11, 2004
Leak/Incident Loc:	**Economizer** – crack at weld where 3rd feeder tube header from left sidewall is seal welded to the boiler skin casing at penetration
Downtime hrs due to leak/total:	Total downtime – 45 hr- 15 min
ESP?	No
Classification:	**Non-critical**
How discovered:	Boiler Operator during routine walkdown found wet salt cake in front bank economizer header
Leak detection:	Acoustic leak detection system was in operation but did not detect nor confirm the leak
Sequence of events:	Operator inspected hopper and observed water in hopper. Started to remove liquor burners and insert oil burners. Doors were opened and leak determined to be at lower bottle headers. Boiler taken off line to repair leak.
Bed cooling:	No enhancement
Wash adjacent tube:	No
Repair procedure:	Repaired by grinding and welding defect after casing around the leaking weld burned out
Root cause:	Believed due to vibration
Future prevention:	Continue evaluate temperature measurements. Add vibration restraints. Cut casing at penetrations.
Last full inspection:	Unit inspected March 20, 2003, and acid cleaned Sept, 25, 2002

Fall 2004 - 5	
Location:	**MeadWestvaco, Charleston, South Carolina**
Unit:	B&W Contract No. 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 / large Kvaerner economizer
Incident Date:	May 21, 2004
Leak/Incident Loc:	**Economizer** - longitudinal cracks at lower headers of final, cold bank in 2 tubes initiated on internal tube surface at 1) 38th header from right sidewall, 9th tube from rear wall and 2) 50th header from right sidewall, 11th tube from rear wall. Feedwater from Deaerator enters module at lower headers.
Downtime hrs due to leak/total:	Not applicable.
ESP?	No
Classification:	**Non-critical**
How discovered:	During hydrostatic test after a semi-annual outage.
Leak detection:	Acoustic leak detection system was in operation but did not detect nor confirm the leak
Sequence of events:	Leaks observed during inspection when boiler being hydrostatically tested
Bed cooling:	No enhancement
Wash adjacent tube:	No
Repair procedure:	Repaired by grinding and welding defects
Root cause:	Believed caused primarily by fatigue
Future prevention:	Continue to evaluate temperature measurements and changed boiler startup procedure to reduce temperature cycling. Evaluate cost to replace all rear bank lower inlet headers.
Last full inspection:	Unit inspected March 20, 2003, and acid cleaned Sept, 25, 2002

Fall 2004 - 6	
Location:	**MeadWestvaco, Charleston, South Carolina**
Unit:	B&W Contract No. 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 / large economizer
Incident Date:	July 6, 2004
Leak/Incident Loc:	**Economizer** – longitudinal crack in tube weld at 15th header from the right sidewall, 13th tube from the rear wall
Downtime hrs due to leak/total:	Total downtime 36 hrs-22 minutes
ESP?	No
Classification:	Non-critical
How discovered:	Water observed in economizer hopper
Leak detection:	Acoustic leak detection system was in operation but did not detect nor confirm the leak
Sequence of events:	Water leaking from economizer conveyor by daylight foreman was investigated and wet salt cake found in hopper. Oil burners put in furnace and liquor guns slowly taken out. Doors opened and leak appeared to be in lower, rear economizer headers. Boiler taken off line.
Bed cooling:	No enhancement
Wash adjacent tube:	No
Repair procedure:	Repaired by plugging header at inlet and outlet
Root cause:	Believed caused primarily by fatigue
Future prevention:	Continue to evaluate temperature measurements on tubes and headers. Evaluate cost to replace all rear bank lower inlet headers.
Last full inspection:	Unit inspected March 20, 2003, and acid cleaned Sept, 25, 2002

Fall 2004 - 7	
Location:	**MeadWestvaco, Charleston, South Carolina**
Unit:	B&W Contract No. PR-206. Startup 1984. Kvaerner replaced rear economizer in Nov. 1995 and front economizer in June 1996
Size:	4.5 million ppd solids. 691, 000 lb/hr steam. Operating at 1450 psig & 880F. Design at 1725 psig. 2 drum / large economizer
Incident Date:	September 5, 2004
Leak/Incident Loc:	**Economizer** - longitudinal crack in 21st header from the right sidewall, 16th tube from the rear wall. A 2nd longitudinal crack 22nd header from the right sidewall, 15th tube from the rear wall
Downtime hrs due to leak/total:	Total downtime 45.5 hours
ESP?	No
Classification:	**Non-critical**
How discovered:	Operator sent to look for a leak found wet salt cake in the rear economizer hopper
Leak detection:	cccc
Sequence of events:	EMS Operator noticed 1st fields in both chambers were periodically tripping. Sent operator to look for a tube leak. Operator found wet ash on conveyor. Oil guns were placed in operation replacing liquor guns as they were removed. Doors were opened to determine leak at a lower header. Boiler taken offline. 2nd leak found on hydro over 900 psig after 1st leak tube plugged.
Bed cooling:	No
Wash adjacent tube:	No. The 2 leaks were independent
Repair procedure:	Crack at 21st header plugged at inlet and outlet, dead platen left in place. Crack at 22nd header weld overlaid.
Root cause:	Unknown. Cracks had some indication of corrosion, but appeared to be caused primarily by fatigue. Several models created using temperature data. No conclusions to date.
Future prevention:	Continue to evaluate cost of replacing front and rear economizers
Last full inspection:	Unit inspected March 20, 2003, and acid cleaned Sept, 25, 2002

Fall 2004 - 8	**Critical Incident No. 594**
Location:	**Smurfit-Stone Container Corporation, Missoula, Montana**
Unit:	No. 4 recovery. B&W Contract PR-147. Startup 1972.
Size:	3.0 million ppd solids. Steam flow 485,000 lb/hr. Operating at 600 psig & 750F. Design at 950 psig. 2 drum boiler / large economizer (5-pass crossflow).
Incident Date:	July 12, 2004
Leak/Incident Loc:	**Economizer** – tube ruptured resulting in an opening of 3" by 2". Leak was 1 ft. below 3rd header from the front in 23rd row from LHSW, 4th tube from front row of header (header has 6 tubes entering radially.) Opening was toward furnace and forward of any baffles.
Downtime hrs due to leak/total:	Total outage of 45 hr-25 min, of which 35 hours is attributed to failure
ESP?	ESP was initiated. Minimum unrevocable time to not reenter building is 5 hours
Classification:	**Critical Incident -**
How discovered:	Severe positive draft, increased feedwater flow & loss of drum level.
Leak detection:	None installed
Sequence of events:	Fieldman observed fire blowing out of nozzle ports. Panel operator noted drum water level and feedwater flow changes as he responded to high draft alarm. They briefly communicated and ESP initiated 15 seconds after first indication of problem..
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Removed tube and installed plugs at the headers.
Root cause:	Undetermined. Tube metal was thin in failed area, possibly washed by a previous tube failure. Wastage appeared to be external.
Future prevention:	
Last full inspection:	Inspected September 2003. Acid cleaned August 1981 using 6% HCl

Fall 2004 - 9	
Location:	**Weyerhaeuser, Johnsonburg, PA**
Unit:	Tampella Contract No. 90132. Startup 1993.
Size:	2.2 million ppd solids. Steam flow 346,000 lb/hr. Operating at 1250 psig & 900F. Design at 1600 psig. Single drum / large economizer
Incident Date:	March 30, 2004
Leak/Incident Loc:	Economizer – crack in weld between tube No. 3 of platen 54 and extruded lower header of No. 1 economizer bank (bank where feedwater enters) .Tube 3 is 3rd from bottom of inclined tubes entering header.
Downtime hrs due to leak/total:	Total downtime 32 hours
ESP?	No
Classification:	Non-critical
How discovered:	Operator Walkdown
Leak detection:	None installed
Sequence of events:	Moisture observed in No. 1 economizer ash conveyor during routine walkdown. Based on experience with similar leaks, liquor firing was terminated. Inspection showed the wet area and boiler was shutdown for repair
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Defect removed by grinding and weld overlay
Root cause:	A previous metallurgical analysis revealed poor shop welds to be the root cause.
Future prevention:	None
Last full inspection:	Inspected May 2003. Chemical acid cleaned on startup in 1993

Fall 2004 - 10	
Location:	**Weyerhaeuser, Johnsonburg, PA**
Unit:	Tampella Contract No. 90132. Startup 1993.
Size:	2.2 million ppd solids. Steam flow 346,000 lb/hr. Operating at 1250 psig & 900F. Design at 1600 psig. Single drum / large economizer
Incident Date:	April 27, 2004
Leak/Incident Loc:	Economizer – pinhole in weld between tube No. 3 of platen 66 and extruded lower header of No. 1 economizer bank (bank where feedwater enters) .Tube 3 is 3rd from bottom of inclined tubes entering header.
Downtime hrs due to leak/total:	Total downtime 16 hours
ESP?	No
Classification:	Non-critical
How discovered:	Operator Walkdown
Leak detection:	None installed
Sequence of events:	Moisture observed in No. 1 economizer ash conveyor during routine walkdown. Based on experience with similar leaks, liquor firing was terminated. Inspection showed the wet area and boiler was shutdown for repair
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Defect removed by grinding and then weld overlaid
Root cause:	Stress assisted corrosion
Future prevention:	None
Last full inspection:	Last inspection May 2003. Acid cleaned during startup 1993

Fall 2004 - 11	**See Incident No. 24**
Location:	**MeadWestvaco, Evadale, Texas**
Unit:	No. 3 Recovery Unit. Ahlstrom Contract No. 6135. Startup 1995
Size:	2.7 million ppd solids. Steam flow 380,000 lb/hr. Operating at 600 psig & 750F. Design at 765 psig. Single drum boiler / large economizer.
Incident Date:	January 18, 2004
Leak/Incident Loc:	**Superheater** – tube ruptured at primary superheater pendant stitch weld between tubes 3 and 4 approx 1 ft. below the roof
Downtime hrs due to leak/total:	Total downtime 129.7 hours
ESP?	ESP performed
Classification:	**Non-critical**
How discovered:	Boiler foreman suspected a leak which was visually verified with a boiler walkdown
Leak detection:	A Nalco RBLI system was in operation and did show mass balance deviations
Sequence of events:	Recovery Boiler foreman and Recovery Operator were walking down boiler inspecting for possible tube leak. Boiler was experiencing blow back, ID fan speed had increased, precipitator opacity had increased and there was a variation in the mass balance. Drum level and pressure remained normal. Walkdown disclosed a SH leak and boiler was ESPd.
Bed cooling:	Sodium bicarbonate applied by Southland Fire and Safety Equipment 'possibly saved 12 hours
Wash adjacent tube:	No
Repair procedure:	Ruptured tube replaced with a Dutchman. 23 additional linear indications in stitch welds at tubes 2, 3 and 4 at same elevation were ground out and replaced with TIG welding.
Root cause:	Fatigue stress at pendant stitch weld caused by pendant movement
Future prevention:	Sootblower steam pressure reduced to minimize pendant movement. Investigate history of similar welds in other boilers
Last full inspection:	Last inspection December 2003. Chemical cleaning October 1998 using Chelant, EDTA

Fall 2004 - 12	
Location:	**Canadian Forest Products Ltd. (Intercontinental Pulp Co, Ltd), Prince George**
Unit:	B&W contract started up in 1967.
Size:	3.2 million ppd solids. Steam flow 550,000 lb/hr. Operating at 600 psig and 710F. Design at 680 psig. 2 drum boiler. Economizer rebuilt by B&W in 1991
Incident Date:	May 7, 2004
Leak/Incident Loc:	**Superheater** – small pinhole leak at the to the top of the steam drum of the #8 saturated steam tube connecting steam drum to SH inlet.
Downtime hrs due to leak/total:	Not applicable
ESP?	No
Classification:	Non-critical
How discovered:	Observed during post-shutdown hydro testing of boiler
Leak detection:	Not installed
Sequence of events:	Leak observed and repaired
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Tube seal welded into drum
Root cause:	No information
Future prevention:	No information
Last full inspection:	No information

Fall 2004 -13	

Location:	**Weyerhaeuser Company, Springfield, Oregon**
Unit:	CE Contract No. 26968. Startup 1971
Size:	2.4 million ppd solids. Steam flow 450,000 lb/hr. Operating at 600 psig & 720F. Design at 900 psig. 2 drum boiler / Large economizer
Incident Date:	May 28, 2004
Leak/Incident Loc:	**Superheater** – 2" OD tube feed tube from steam drum to first primary SH loop cracked 85% around circumference at the roof penetration. Tube is element #11, 2nd of 5 tubes
Downtime hrs due to leak/total:	Total downtime 72 hours
ESP?	No
Classification:	**Non-critcal**
How discovered:	Acoustical leak detection system alerted operator of an elevated noise level in furnace
Leak detection:	Triple 5 Structure Borne acoustical leak detection system, with 29 sensors on boiler, detected the leak. Started picking up sound 2 days before operating crew found the leak
Sequence of events:	When acoustical alarm was energized, sequentially valved out desuperheater and IK steam, and there was no change in noise level. (Triple 5 said leak had steam signature.) Removed liquor from boiler and could hear leak high in the furnace. Could not see leak. No change in water chemistry or in draft. Took orderly shutdown, cooled bed for 14 hrs and started water wash. Found leak during hydro.
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Sectioned out cracked tube.
Root cause:	Thermal induced cracking. Single crack opened; no bifurcation. Metallurgical exam showed no plastic deformation nor grain boundary movement. No prolonged overheating.
Future prevention:	Inspected roof tubes and found no thinning.
Last full inspection:	Inspected October 2003. Chemical cleaned in 1992.

Fall 2004 - 14	**Critical Incident No. 595**
Location:	**Weyerhaeuser Company, Springfield, Oregon**
Unit:	CE Contract No. 26968. Startup 1971
Size:	2.4 million ppd solids. Steam flow 450,000 lb/hr. Operating at600 psig & 720F. Design at 900 psig. 2 drum, crossflow bank in boiler with 27' drum centers/ Large economizer
Incident Date:	July 17, 2004
Leak/Incident Loc:	**Boiler Bank** – crack 85% around circumference of 2.5" OD boiler bank tube at interface of tube with lower drum at midpoint between sidewalls. 8th row from front of bank, 3rd row back of sootblower cavity.
Downtime hrs due to leak/total:	Total downtime 87 hours
ESP?	No
Classification:	Critical Incident
How discovered:	Acoustical leak detection system alerted operator to the presence of a leak
Leak detection:	Triple 5 Structure Borne acoustical leak detection system, with 29 sensors on boiler, detected the leak. Started picking up sound 1 day before operating crew found the leak
Sequence of events:	Triple 5 calls control room & reports 4 sensors have increase in level. 2 sensors at upper front of bank increased most; 2 others at upper economizer section. Sootblowers off - operators heard a noise & Triple 5 noted elevated noise levels. Conductivity of blowdown increasing steadily. No sign of water in hoppers. Liquor removed from boiler. Sound heard by operators & acoustical sensors went to normal. Blowdown conductivity went down. Back on liquor to determine if noise returns. Noise returned. Acoustical sensors went into alarm. Triple 5 said sound spectrum confirmed a leak. Doors opened at 6th floor. Steam leak clearly heard, but not seen. Concluded a SH leak. Decision to take orderly shutdown.
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Removed three tubes and plugged holes in steam and mud drum
Root cause:	Low strain, high cycle mechanical fatigue from long term vibration. No stabilizing bars. Soot blowers changed to high energy nozzles approx. 1 month prior to incident.
Future prevention:	Leaks inside furnace hard to locate. Don't waste a lot of time looking.
Last full inspection:	Inspected October 2003. Chemical cleaned in 1993

Note: ESP Subcommittee suggests this boiler should have been rapid drained

Fall 2004 - 15	**Critical Incident No. 596**
Location:	**Port Townsend Paper Corp, Port Townsend, Washington**
Unit:	CE (Alstom Power) Contract No. CE-5667. Startup 1969
Size:	2.7 million ppd solids. Steam flow 354,300 lb/hr. Operating at 500 psig, 650F. Design at 600 psig. 2 drum / small economizer / LAH. Boiler Bank single pass, cross flow arrangement.
Incident Date:	December 25, 2003 (Christmas day, time 0035 hrs)
Leak/Incident Loc:	**Boiler Bank** – total rupture of boiler bank tube ~ 4' above mud drum in 1st row from sidewall, 6th radial row up from rear side of drum
Downtime hrs due to leak/total:	Total downtime off liquor 32 hr- 10 m. Time off line 27 hr – 22 min.
ESP?	ESP was initiated. Boiler cooled 12 hours before building accessed.
Classification:	**Critical Incident**
How discovered:	Boiler experienced a high furnace pressure trip
Leak detection:	None installed
Sequence of events:	Boiler tripped on high furnace pressure. Nobody was in control room. Operator returned from rest room and took steps to determine problem. Liquor and FD fan had tripped; ID fan running. Draft readings not erratic. Operator did not think he had a leak. Directed asst to remove liquor guns from furnace; asst heard noises from furnace, informed Operator, and proceeded to upper levels for observation. Asst thought noise from economizer & isolated EC. Management team went to investigate, opened door on 9th floor and saw a large volume water flowing over the mud drum. Foreman radioed Operator to ESP. then went to control room & boiler not ESPd. Again phoned & boiler was ESPd. Total elapsed time ~27 min.
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Tube plugged at drums
Root cause:	Erosion by sootblower steam. 8 tubes below 0.80" were also plugged
Future prevention:	Verifying slope of all sootblowers to assure condensate not collecting in lances
Last full inspection:	Inspected October 2003. Chemical cleaning December 1992 with inhibited HCl + ammonium biflouride

Note: Heat Gun is a tool that may help to identify hot spots, but must be supplemented with probing of the bed

Fall 2004 - 16	**Critical Incident No. 597**
Location:	**Smurfit Stone Container Corp, Fernandina Beach, Florida**
Unit:	No. 5 Recovery boiler. B&W Contract PR-189. Startup 1978.
Size:	3.0 million ppd solids. Steam Flow 495,700 lb/hr. Operating at 870 psig & 825F. 2 drum boiler / large economizer Boiler bank is single pass, crossflow arrgt.
Incident Date:	May 6, 2004
Leak/Incident Loc:	**Boiler Bank** – 1st-1" circumferential crack in 2nd row from furnace side bank ~ 3" from steam drum shell. 2nd-1/ 8" pinhole in tube plug weld
Downtime hrs due to leak/total:	Total downtime off liquor – 58 hr 7 min. Time off line 53 hr 17 min
ESP?	ESP Performed.
Classification:	Critical Incident
How discovered:	Operator heard leak
Leak detection:	Nalco RBLI-Trasar system (combined mass balance and Tracer) in operation did not provide initial detection, but the mass balance did alarm at 7 AM, 24 min before ESP. Installed 1997
Sequence of events:	Steam flow dropped from 350k to 250k . No other changes observed. At shift change 30 minutes later, sootblower steam was turned off & operators went to investigate. Heard noise on 9th floor above boiler bank hoppers. Supervisor called and both heard noise of possible leak. ESP initiated 84 minutes after initial drop in steam flow
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	1st leak- tube plugged at drums. 2nd leak- Grinding weld of plug and repair welding the plug
Root cause:	1st – external wastage 2nd – bad weld on plug
Future prevention:	
Last full inspection:	Inspection March 2004. Alkaline boilout 1990
Fall 2004 - 17	**Critical Incident No. 598**
Location:	**Rayonier Performance Fibers, Jesup, Georgia**

Unit:	No.5 Recovery boiler. B&W Contract PR-153. Startup1972
Size:	3.3 million ppd solids. Steam flow 549,000 lb/hr. Operating at 630 psig & 750F. Design at 750 psig. 2 drum boiler/large economizer
Incident Date:	July 19, 2004
Leak/Incident Loc:	**Furnace Screen** – 2 overheat failures on same tube in 4th element from RHSW. Both thin lipped with significant swelling. Lower leak 1 ½" long by ¼" wide in 2" OD sloped section ~ 4' outside arch. Upper leak ¾" long by 1/8" wide in 3" OD vertical section just above swage
Downtime hrs due to leak/total:	Total downtime 105.5 hours.
ESP?	ESP performed
Classification:	**Critical Incident**
How discovered:	Steam / feedwater differential, boiler water chemistry and audible noise
Leak detection:	None installed
Sequence of events:	Operator noticed at 5:00 AM steam / feedwater differential starting to spread. Turbine operator advises water tests OK. 7:25AM-liquor flow cut back as plugging in convection banks over 2 days continued to worsen. Water test operator calls at 7:30 AM to request check of blowdowns for leaks. None found. At 8:30AM, Water Test Operator begins to run additional samples. 9:00AM-Boiler walked down with steam off using automatic valve. 10:00AM – IK's valved off manually. Liquor pulled. Atomizing steam for oil guns off. Walkdown checking for noise. Building cleared of unnecessary personnel. At 11:00Am, ESP initiated.
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Tube section installed from lower cut adjacent to arch to 82" above upper failure where thinning of tube stopped
Root cause:	Short term overheat resulting from very heavy, waterside deposit at 2" OD weld just below swage.
Future prevention:	Refresher ESP training conducted. Will prepare detailed post-ESP Procedure.
Last full inspection:	Inspected 2002. Acid cleaned with HCl in 1999

Fall 2004 - 18	
Location:	**Smurfit-Stone Container Corporation, Brewton, Alabama**
Unit:	No. 1 Recovery Boiler. B&W Contract PR-32. Startup 1957
Size:	!.2 million ppd solids. Steam flow 184,000 lb/he. Operating at 880 psig & 830F. Design at 975 psig. 2 drum boiler/direct contact evaporator. 3 pass, baffled boiler bank.
Incident Date:	July 2, 2004
Leak/Incident Loc:	**Boiler Bank** – pin hole leak in row 13, 10th tube from south end of drum. Inspection detected a small cut in 10th tube in rows 14 and 15.
Downtime hrs due to leak/total:	Downtime due to leak 38 hr-32 min. Total downtime 43 hr-27 min.
ESP?	No
Classification:	Non-critical. Baffles in bank block water from the furnace
How discovered:	First indication was a drop in chemicals in boiler. Leak identified on walkdown.
Leak detection:	None installed
Sequence of events:	Power house called Recovery Operator that chemical in the boiler water was low. Difference in water flow and steam flow was within normal range. Blow downs checked and none leaking. Although boiler had been walked down 2 hours earlier, Operator had boiler walked down again and helper heard a small noise under the steam drum. Shutdown sootblowers and noise continued. A small leak was observed through a hole in the casing to be behind the bank baffle where water could not enter furnace. Boiler shutdown in normal manner and cooled
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Plugged all three tubes in steam and mud drums. Hydro disclosed leak at one steam drum plug
Root cause:	Near drum corrosion. May have been caused by earlier ESP. Tubes are original from 1957
Future prevention:	
Last full inspection:	Inspected June 2003. Chemically cleaned in 1983

Fall 2004 - 19	**Critical Incident No. 599**
Location:	**Buckeye Cellulose, Foley Plant, Foley, Florida**
Unit:	No. 4 Recovery Boiler. B&W Contract PR-167. Startup 1974
Size:	2.96 million ppd solids. Steam flow 430,000 lb/hr. Operating at 600 psig & 750F. Design at 750 psig. 2 drum boiler / large economizer
Incident Date:	May 13, 2004
Leak/Incident Loc:	**Upper Furnace (rear wall tube inside arch)** – circumferential crack ½" long inside tube and 7/8" outside tube. Leak on rear wall support tube at bolted hopper support bracket that is a flat bar with U-bolt around the tube. Flat bar sits on top of shear lug welded to tube.
Downtime hrs due to leak/total:	Total downtime 154 hours
ESP?	ESP performed. Mandatory 8 hour waiting period
Classification:	**Critical Incident**
How discovered:	Operator on normal walkdown of boiler noticed drip coming form screen tube header casing
Leak detection:	Water mass balance system installed by plant in operation did not detect nor confirm leak.
Sequence of events:	Operator noted at 1211 hrs small drip with no associated sound. Steam/ feedwater differential normal & no water in boiler bank hopper. Blind pass door opened at 1230 hrs & at 1245 hrs, water droplets seen impacting casing near screen tube header inside arch. Boiler rapid drained
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Tube sectioned. Other support brackets checked for similar cracking; none found. Leaks found during hydro repaired-furnace screen tube sectioned and boiler bank wall tube plugged in drums for later replacement. These 2 leaks believed to be caused by hydro.
Root cause:	Appeared to be fatigue crack at top of the bracket possibly caused by temperature cycles of boiler hopper
Future prevention:	Screen tie stitch welds-3 locations not to OEM dwgs will have tubes sectioned & rewelded at June 2004 outage. Boiler Bank sidewall tubes already scheduled for replacement with welds to buckstays attached to membrane bar rather than the tube
Last full inspection:	Inspected May 2003. Chemically cleaned 1999 using HCl in combination with thiourea

Fall 2004 - 20	
Location:	**Weyerhaeuser Company, Campti, Louisiana**
Unit:	No. 1 Recovery Boiler. B&W Contract PR-188. Startup 1974
Size:	1.58 million ppd solids. Steam flow 220,000 lb/hr. Operating at 600 psig & 750F. Design at 700 psig. 2 drum boiler
Incident Date:	April 14, 2004
Leak/Incident Loc:	**Lower Furnace** – ¼" long crack in rear wall tube #11, 3/4:" above weld line
Downtime hrs due to leak/total:	Total downtime 37 hours.
ESP?	No
Classification:	**Non-critical**
How discovered:	Asst Superintendent noticed excessive water around doghouse/dissolving tank area
Leak detection:	None installed
Sequence of events:	On notice of excessive water, 3rd Asst instructed to reduce flow to weak wash showers. Water still seen dripping from bottom of boiler. Sample not slippery and analysis matched boiler water. **+ 1 hr** - Leak suspected as external to furnace as there were no classic signs of water in the furnace. Began looking for leak source. **+ 2 hrs -** Began pulling liquor for orderly shutdown. Lower vestibule opened and water seen. Fire put in power boiler. **+ 3 hr-10m** - Liquor out of recovery boiler. **+ 3hr-3om** - Lagging removed & water seen around rear header. **+ 7hr-30m** Bed burned out & fire out of furnace
Bed cooling:	No
Wash adjacent tube:	Leak impinged on rear wall header at an area where ~ one-half of header wall thickness. appeared to have been thinned by weak wash from dog house showers. Tube #12 also appeared to have been thinned by leak from #11 tube.
Repair procedure:	6" Dutchman installed on Tube Nos. 11 and 12.
Root cause:	No information
Future prevention:	Consider annual UT testing of lower rear wall headers
Last full inspection:	Inspected September 2003

Fall 2004 - 21	
Location:	**UPM-Kymmene Miramichi Inc, Miramichi, New Brunswick**
Unit:	No. 4 Chemical Recovery Unit. CE-ABB Contract CA 88101. Startup 1990.
Size:	2.5 million ppd solids. Steam flow 410,000 lb/hr. Operating at 1250 psig & 850F. Design at 1425 psig. 2 drum boiler
Incident Date:	March 6, 2004
Leak/Incident Loc:	**Lower Furnace** – 2 wall tubes spout failed below furnace floor behind #2 smelt – 1 rupture & 1 ¼" hole. Similar incident in April 2002 with No. 3 spout.
Downtime hrs due to leak/total:	Total downtime 86.5 hours.
ESP?	ESP Performed
Classification:	Non-critical
How discovered:	Loss of steam drum level and lower 3 levels of building filled with steam
Leak detection:	None installed
Sequence of events:	Liquor firing stopped at 0605 due to problems in brown stock washer area. At 0640, bottom two floors of recovery building started to fill with steam. Day Supervisor, Asst Area Supervisor & Helper checking for source when steam drum water level could not be maintained and entire building filled with steam. At 0700, boiler ESPd.
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Six tubes sectioned with short lengths and 20 tubes weld repaired
Root cause:	Extensive, localized chemical attack by weak wash on carbon steel portion of tubes below furnace floor
Future prevention:	Weak green liquor wash for spout hoods replaced with water. Next shutdown, install tube shields and refractory behind spout enclosures to protect tubes.
Last full inspection:	Inspected June 2003. Chemical cleaned 1998 using alkaline boilout, inhibited HCl soak & citric acid rinse

Fall 2004 - 22	**Critical Incident No. 600**
Location:	**Delta Natural Kraft, Pine Bluff, Arkansas**
Unit:	Recovery Boiler No. 1. CE (Alstom Power) Contract 06256. Startup 1957.
Size:	750,000 ppd solids. Steam flow 100,000 lb/hr. Operating at 415 psig & 750F. Design at 675 psig. 3 drum boiler / Direct Contact Evaporator (DCE)
Incident Date:	May 5, 2004
Leak/Incident Loc:	**Furnace Floor** – ¾" long circumferential crack in 7th tube from RHSW ~ 18" from front spout wall. Crack where membrane burned back to tube. Two other tubes in area had similar cracks developing. "membrane" is flat bar covering gap between tube fins and continuous weld to both fins
Downtime hrs due to leak/total:	Total downtime 49 hours. Downtime attributed to ESP was 44 hours.
ESP?	ESP performed. Mandatory 8 hour waiting period before building accessed
Classification:	**Critical Incident**
How discovered:	Visual observation of bed disturbance through gun port after boiler down for chill and blow.
Leak detection:	None installed
Sequence of events:	Boiler down for Chill & Blow. Natural gas burners lighted & liquor guns removed. Bed was burning down, After gas firing ceased, Superintendent inspecting bed noticed 'bubbling' in the bed & heard popping noise from furnace. ESP initiated.
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Cracks ground out and weld repaired
Root cause:	Refractory burned away leading to increased heat to floor tubes. Attributed to low bed levels & thin, broken refractory.
Future prevention:	Inspect floor on a regular basis,
Last full inspection:	Inspected July 2003. Cleaned 1986 with HCl.

Fall 2004 - 23	**Critical Incident No. 601**
Location:	**Bowater Incorporated, Catawba, South Carolina**
Unit:	Local Unit No. 3. B&W Contract PR-205. Startup 1983. Insertable smelt spouts installed 2001
Size:	3.509 million ppd solids. Steam flow 500,000 lb/hr. Operating at 900 psig & 900F. Design at 1000 psig. 2 drum boiler with large economizer.
Incident Date:	August 8, 2004
Leak/Incident Loc:	**Lower Furnace –** 1" crack on outside (cold side) at membrane to tube weld in 2nd tube from spout of six pack opening. Crack slightly below furnace floor level and above the furnace floor seal.
Downtime hrs due to leak/total:	Total downtime 177.5 hours, of which 26.7 hrs was for ESP (including 12 hour waiting period and bed cooling). Annual outage initiated early because of extent of repairs to spout area.
ESP?	ESP performed. Policy is to stay out of recovery area 12 hours
Classification:	Critical Incident – water had a path whereby entering the furnace was possible
How discovered:	Water/steam leak observed when spout area investigated due to a smelt leak
Leak detection:	In house Mass Balance System was in operation but neither detected nor confirmed the leak
Sequence of events:	Over a 2 month period, smelt leaked for a short time on 2 occasions, then froze, and on the 3rd incident at same location under a center spout, steam was noted between dissolving tank and spout. Inspection 20 minutes later detected steam & water spraying from bottom of spout plate. No indication that water entering furnace, but 15 min. later smelt began to "spit". ESP was initiated
Bed cooling:	Southland used 14,400 lb sodium bicarbonate & 27 cylinders N2 to expedite cooling estimated to save 10-12 hours. Application took ~ 4 hrs & started 21.5 hr after ESP
Wash adjacent tube:	2 adjacent tubes washed thin
Repair procedure:	Replaced sections of 3 affected tubes in 6 pack applying studs on furnace side and welding membrane bar
Root cause:	
Future prevention:	
Last full inspection:	Inspected August 2003. Acid cleaned October 1998 using 5-7% HCl (inhibited) & 0.25% ammonium bifluoride

Fall 2004 - 24	See Incident No. 11
Location:	**Mead Westvaco, Evadale, Texas**
Unit:	No. 4 Recovery Unit. CE Contract 29873. Startup 1975
Size:	4.7 million ppd solids. Steam flow 680,000 lb/hr net. Operating at 600 psig & 750F. Design at 765 psig. 2 drum boiler / large economizer
Incident Date:	January 18, 2004
Leak/Incident Loc:	**No Leak**
Downtime hrs due to leak/total:	Total downtime 38.7 hours
ESP?	ESP was performed. 8 hour mandatory waiting period
Classification:	**No Incident (No Leak)**
How discovered:	Walkdown
Leak detection:	Nalco RBLI system in operation. Results not applicable.
Sequence of events:	Operators were walking down No. 3 recovery boiler inspecting for a leak and discovered a SH leak. The Recovery Operator contacted the No. 4 boiler fireman to ESP No. 3 recovery boiler. Fireman was standing in front of the No. 4 operating console when he heard the order and ESPd RB No. 4. Realizing his mistake, he ESPd No. 3. (See Incident Summary No. 11 for No. 3 RB).
Bed cooling:	Southland Fire & Safety Equipment applied sodium bicarbonate. Estimate possibly 12 hours saved.
Wash adjacent tube:	Not applicable
Repair procedure:	Not applicable
Root cause:	Not applicable
Future prevention:	Procedures adopted to insure boiler fireman remains with boiler for which he has responsibility during any leak investigation, for clear concise communication.
Last full inspection:	Inspected March 2003. chemically cleaned January 2002 with Chelant/EDTA

Fall 2004 - 25	
Location:	**Dissolving Tank Explosion File No. 27**
Unit:	**Domtar, Cornwall, Ontario**
Size:	B&W Contract. Startup 1958.
Incident Date:	1.1 million ppd solids. Steam flow 223,000 lb/hr. Operating at 250 psig saturated steam. Design at 333 psig. 2 drum boiler
Leak/Incident Loc:	August 29, 2004
Downtime hrs due to leak/total:	**Dissolving Tank Explosion** - north spout blown away from boiler with spout water piping. Shatter jet twisted, explosion doors blown off along with 2 heavy plate over the doors, all insulation for air ducts, spout cameras damaged, and 6 inches smelt laying in front of spouts.
ESP?	Total downtime 65 hours
Classification:	Dissolving Bank Explosion
How discovered:	
Leak detection:	
Sequence of events:	None installed
Bed cooling:	1720 hrs – total mill power outage due to electrical storm. 1750 – all fans running. 1800 – purge complete. 1815 – aux fuel on with 2 -16MMB gas igniters. 1930 - #1 oil burner on. 1945 - #4 oil burner on at 2 gpm. 2000 – firing 5 gpm of oil. 2050 – oil flow 5.5 gpm & producing 66, 000 lb/hr steam. Only small amount smelt pool visible. 2100 – south spout bar removed; no flow. Bar reinserted. 2110 – north spout bar removed; Small flow for a few seconds became a full flow. Spout Person & Engineer ascended to operating floor where they noticed through grating several small explosions from north spout. They went too control room and shut off auxiliary fuel. Spout ran for 20 minutes before stopping.
Wash adjacent tube:	Not applicable
Repair procedure:	Not applicable
Root cause:	Replaced north spout, cooling water lines (vacuum siphon system), and shatter jet system.
Future prevention:	Smelt runoff
Last full inspection:	

Fall 2004 - 26	
Location:	**Longview Fibre, Longview, Washington**
Unit:	No. 22 Recovery Boiler. ABB-CE Contract CA 89102. Startup 1992.
Size:	3.7 million ppd solids. Steam flow 643,000 lb/hr. Operating at 825 psig & 750F. Design at 1065 psig. Single drum boiler / large economizer
Incident Date:	August 22, 2004
Leak/Incident Loc:	**Boiler Bank** – crack in boiler bank sidewall tube at sootblower opening. Crack started at toe of membrane weld and extended into tube wall
Downtime hrs due to leak/total:	Total downtime 180 hours
ESP?	ESP performed. Policy is to stay out of recovery area from 4 to 24 hours depending on location and nature of leak and success of ESP.
Classification:	**Non-critical**
How discovered:	Operator discovered water in ash hopper when investigating a tripped generating bank rotolock
Leak detection:	Hercules LeakTrac system installed in 2001 was in operation and provided initial detection of the leak. Water mass balance indicated a leak 36 hours prior to ESP, but it was considered it as a false alarm and dropped out after 12 hours. Chemical balance did not detect leak. Hercules says leak was to small to be detected from chemical analysis.
Sequence of events:	The Rotolock plugging was cleaned and then operator noted water continued to appear. Opened access door at other end of hopper and found water in the hopper. Walkdown with sootblowers and blower seal air fan off discovered a roaring sound at a wallbox. ESP was initiated
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	4” section of tube cut out and replaced. Sectioning selected as crack was a spider web of small cracks. Hydro after repair disclosed leak on opposite sidewall at sootblower wallbox.. Prompted NDT for all remaining 8 sootblower wallboxes in boiler bank sidewalls
Root cause:	Thermal fatigue caused by manufacturing defect. Weld at membrane termination was not closed
Future prevention:	All similar locations in generating bank inspected. Several small cracks ground out and repaired and one additional defect was repaired.
Last full inspection:	Inspected July 2004. Chemically cleaned Nov. 1999; caustic boilout followed by HCl.

Fall 2004 - 27	**Critical Incident No. 602**
Location:	**International Paper, Courtland, Alabama**
Unit:	No. 2 Recovery Boiler. B&W Contract No. PR-180. Startup in 1975.
Size:	4.0 million ppd solids. Steam flow 540,000 lb/hr. Operating at 450 psig & 540F. Design at 550 psig. 2 drum boiler/ DCE
Incident Date:	June 29, 2004
Leak/Incident Loc:	**Furnace Screen – horizontal weld crack that propagated into seal weld around the 4.5" supply tube for the furnace screen supply header where it penetrates the drum ash hopper**
Downtime hrs due to leak/total:	Total downtime 39 hours
ESP?	No
Classification:	**Critical Incident**
How discovered:	Operator noticed moisture on the hopper wall during the normal round
Leak detection:	A mill developed mass balance system that is time weighted did not detect the small leak. Mill notes "System is typically correct, however, a leaking valve or a significant change in firing rate can cause an incorrect alarm". (Revised 1i/25 after discussion with mill)
Sequence of events:	Operator checked the ash hopper during normal rounds and noticed some moisture in the hopper. He went to a door at the next higher elevation and could see what appeared to be water running down the back of the hopper wall. An orderly shutdown was initiated
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Leak repaired with pad welds. Horizontal weld trimmed around the supply tube fillet weld to relieve stress.
Root cause:	Stress cracking that propagated into the tube seal weld
Future prevention:	Added area to annual PT inspection. Modified hopper weld to eliminate stress cracking potential
Last full inspection:	Inspected June 6, 2003. Acid cleaned May 14, 2001

Fall 2004 - 28	Critical Incident No. 603
Location:	**International Paper, Courtland, Alabama**
Unit:	No. 2 Recovery Boiler. B&W Contract No. PR-180. Startup in 1975.
Size:	4.0 million ppd solids. Steam flow 540,000 lb/hr. Operating at 450 psig & 540F. Design at 550 psig. 2 drum boiler/ DCE
Incident Date:	May 7, 2004
Leak/Incident Loc:	**Upper Furnace** – crack around lower half of a 2" OD riser tube on the rear furnace sidewall upper header closest to the steam drum. Short length riser runs from end of header to the steam drum.
Downtime hrs due to leak/total:	Total downtime 54 hours
ESP?	No
Classification:	Critical Incident
How discovered:	Operator noticed water running down between sidewall and casing
Leak detection:	A mill developed mass balance system that is time weighted provided initial detection of the leak. Mill notes "System is typically correct, however, a leaking valve or a significant change in firing rate can cause an incorrect alarm"
Sequence of events:	The leak detection system indicated a potential leak; there was no control room information to verify the presence of a leak. The operator made an inspection noticed water down between the sidewall and casing.
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Crack burred out and TIG welded; then spirited. Same weld location on adjoining tubes inspected
Root cause:	Fatigue crack resulting from 30 yeas of cycling
Future prevention:	
Last full inspection:	Inspected June 6, 2003. Acid cleaned May 14, 2001

Fall 2004 - 29	
Location:	**International Paper, Prattville. Alabama**
Unit:	Recovery Boiler No. 1. Alstom Power contract . Startup 1967.
Size:	2.1 million ppd solids. Steam flow 329,000 lb/hr. Operating at 850 psig and 830F Design at 900 psig. 2 drum boiler / DCE
Incident Date:	August 17, 2004
Leak/Incident Loc:	**Lower Furnace** – approx. 1.5" crack on the outside center of #50 right wall tube at the lower left corner of the smelt spout seal box attachment weld at floor tube level. Tube is the outside tube of an 8-pack wall arrangement to which the spout seal box is seal welded
Downtime hrs due to leak/total:	Total downtime 76 hours 25 minutes
ESP?	ESP performed. Current irrevocable policy is to stay out of recovery area 4 hours
Classification:	**Non-critical. Water could not get into furnace**
How discovered:	Operator reached through the boiler curbing apron to open the doghouse water valve and felt steam blowing
Leak detection:	Hercules Leak Trac system was in operation but did not detect nor confirm the leak
Sequence of events:	Boiler operating well at minimum liquor load without auxiliary fuel. Operator felt steam blowing when reaching through an opening in the boiler curbing apron to open the doghouse wall wash water valve. Supervisor investigated used a ladder to inspect steam lines below the spout floor level and noted steam coming from the lower vestibule. Everything in control room indicated normal. Boiler water reports OK. ESP was initiated
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	42" long section of wall tube removed and a Dutchman installed
Root cause:	Water side stress assisted corrosion caused by the attachment weld
Future prevention:	Check seal box attachment for cracks on all other smelt spouts during October 2004 outage
Last full inspection:	Last inspection September 2003. Acid cleaned September 2001

Fall 2004 - 30	
Location:	**International Paper, Kaukauna, Wisconsin**
Unit:	No. 8 Recovery Boiler. B&W Contract No. S-9759. Startup 1952. Economizer supplied by Lucy Boiler in 1952.
Size:	750,000 ppd solids. Steam flow 128,000 lb/hr. Operating at 600 psig & 700F. Design at 650 psig. 2 drum boiler / small integral economizer/ tubular air heater
Incident Date:	July 30, 2004
Leak/Incident Loc:	**Economizer** – ¾ inch circumferential crack at buckstay attachment on rear wall formed by last row of economizer tubes
Downtime hrs due to leak/total:	Total downtime 36 hours
ESP?	No
Classification:	Non-critical
How discovered:	Operators investigating sootblower that would not retract
Leak detection:	None installed
Sequence of events:	Sootblower would not retract and cause was being investigated with liquor guns removed when leak was observed
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Crack ground out and weld repaired
Root cause:	Fatigue from buckstay attachment welding channel to tubes with horizontal lselds croos face of tubes, & old age. In past 5 years, ~ 20 economizer tubes have been repaired; this is 2nd on rear wall. Sidewall tubes are all plugged due to similar leaks.
Future prevention:	Economizer on capital list to be replaced within two years.
Last full inspection:	Inspected October 2003. Acid cleaned October 2002

Fal 2004 - 31	**Critical Incident No. 604**
Location:	**International Paper, Georgetown, South Carolina**
Unit:	No. 2 Recovery Boiler. B&W Contract PR-114. Startup 1967.
Size:	3.9 million ppd solids. Steam flow 477,000 lb/hr. Operating at 1000 psig & 825F. Design at 1175 psig. 2 drum boiler / DCE
Incident Date:	August 11, 2004
Leak/Incident Loc:	**Furnace Screen** – approx ½" long crack in a raised blister on the sloped portion of bottom tube of the 4 tube screen platen (#10 of 31 counting form left sidewall)
Downtime hrs due to leak/total:	Total downtime 108 hours 40 minutes
ESP?	ESP performed. Irrevocable policy is to stay out of area 4 hours.
Classification:	**Critical Incident**
How discovered:	Leak identified while inspecting boiler for plugging during a scheduled outage day
Leak detection:	None installed
Sequence of events:	Operations crew working through a mini chill-and-blow with liquor out of furnace and oil burners firing. On opening a 6th floor door, a sound like an air hose blowing was noted. Oil burners were removed to improve visibility. Investigation of sound led to discovery of small vapor fan from the screen tube. Boiler was ESPd. Bed was still smelting; water did not get to the char bed.
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	A 27 inch long section cut out of the sloped portion of tube and Dutchman installed. Access to tubes from installed scaffolding revealed a blister on the bottom tube of platen #13. Further investigation of 19 tubes determined no tubes installed in the last 3 years had deposits whereas 5 of 7 of the original screen tubes had deposits. Further investigation focused on old tubes. Any tube exhibiting deposit was sectioned and a Dutchman installed.
Root cause:	Heavy waterside deposit almost plugging the tube caused long term overheating and creep.
Future prevention:	
Last full inspection:	Inspected thoroughly March 2004. Acid cleaned March 2004 using inhibited 6% HCl / 1% thiourea solution containing 1% ammonium bifluoride

Fall 2004 - 32	**Critical Incident No. 605**
Location:	**International Paper, Vicksburg, Mississippi**
Unit:	B&W Contract PR-105. Startup 1967. Economizer installed in 1985.
Size:	3.0 million ppd solids. Steam flow 509,700 lb/hr. Operating at 1020 psig and 825F. Design at 1200 psig. 2 drum boiler / DCE
Incident Date:	May 19, 2004
Leak/Incident Loc:	**Economizer –** 1/8 inch diameter hole in upper bend of tube 10, row 2
Downtime hrs due to leak/total:	Total downtime 25 hours
ESP?	No
Classification:	Critical Incident – Water could get into furnace
How discovered:	Leak discovered by Production Supervisors
Leak detection:	None installed
Sequence of events:	On discovering the leak, a plan was formulated and an orderly shutdown initiated 2 hours after leak discovered
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Repaired using a fillet weld procedure
Root cause:	Under investigation. It is believed that a prior tube plug leak in 2001 may have eroded a 1" x 2" area where the failure occurred on the failed tube as it was directly facing the prior plug failure.
Future prevention:	Technology investigating economizer condition for consideration of replacement . All inner rows of bends that can be reached will be NDT.
Last full inspection:	Inspected April 2004. Acid cleaned in 2000.

Fall 2004 - 33	
Location:	**International Paper, Pineville, LA**
Unit:	No. 1 recovery Boiler. CE Contract No. 9466. Startup 1968.
Size:	2.5 million ppd solids. Steam flow 414,000 lb/hr. Operating at 875 psig and 825F. Design at 1000 psig. 2 drum boiler / DCE
Incident Date:	May 21, 2004
Leak/Incident Loc:	**Economizer** – leak in blowdown drain line about 10 feet from economizer header and above the cascade evaporator. Apparently the pipe is in the flue
Downtime hrs due to leak/total:	Total downtime 42 hours and 8 minutes
ESP?	No
Classification:	**Non-critical**
How discovered:	Discovered when troubleshooting a reduction in liquor solids and a separation of feedwater and steam flows
Leak detection:	None installed
Sequence of events:	Operators began losing liquor firing solids. When investigating probable causes, it was observed that feedwater flow was increasing with no change in steam flow. Inspection revealed a leak in the economizer drain line. Liquor firing discontinued to begin cooling for repairs.
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Section of drain line replaced
Root cause:	A temporary repair 3 years before had not been permanently fixed
Future prevention:	Review records and increase scope of inspections. Keep list of outage items updated at all times.
Last full inspection:	Inspected April 2004. Acid cleaned 2001.

Fsll 2004 - 34	**Critical Incident No. 606**
Location:	**International Paper, Pine Bluff, Arkansas**
Unit:	No. 4 Recovery Boiler. B&W Contract PR-113. Startup 1967. Economizer retubed 1990
Size:	3.5 million ppd solids. Steam flow 508,000 lb/hr. Operating at 1250 psig & 850F. Design at 1450 psig. @ drum boiler / DCE.
Incident Date:	August 29, 2004
Leak/Incident Loc:	**Economizer –** Primary failure - Tube rupture opened like a door 4" to 8" from lower drum where tube was thinned. Another leak from a in a 6-8 year old weld of a plug into the drum. Tube in top front of economizer could put water in the furnace
Downtime hrs due to leak/total:	Total downtime 160 hours.
ESP?	ESP performed
Classification:	Critical Incident
How discovered:	Boiler pressurized and drum level went below lower limit
Leak detection:	None installed
Sequence of events:	Boiler was at normal operating conditions when it tripped due to high furnace pressure. Operator observed low drum level and high feedwater flow and initiated ESP. Operator evacuating building observed water on economizer duct insulation
Bed cooling:	Sodium bicarbonate (14,000 lb) with nitrogen applied with lances for 9 hours after a 5 hour elapsed time between ESP and start of application. Credited with saving 12 hours in cooling the bed initially at ~ 3 feet above the primary airports to less than 700F.
Wash adjacent tube:	Probably the lower failure resulted from a leak in a plug that washed the adjacent tube
Repair procedure:	UT of all tubes in same location and near leak. All existing tube plugs were replaced that had not been replaced during August 17, 2004 outage. Modified welding procedure to include PT.
Root cause:	Porosity in weld of plug into drum. 5 leaks of similar nature in past 5 months. Die check when plugs being installed did not pick up the porosity.
Future prevention:	Expanded welding procedure for plugging tubes to include PT at preparation, root and final passes.
Last full inspection:	Inspected July 2004. Chemically cleaned July 2003/

Fall 2004- 35	

Location:	**Smurfit-Stone Container, Missoula, Montana**
Unit:	No. 4 Recovery Boiler. B&W Contract PR-147. Startup 1972. Component with leak installed 1991 by B&W.
Size:	3 million ppd solids. Steam flow 485,000 lb/hr. Operating at 600 psig & 750F. Design at 950 psig. Two drum boiler / large economizer
Incident Date:	August 22, 2004
Leak/Incident Loc:	**Lower Furnace in Vestibule –** small pin hole leak in field weld connecting header supply tube to downcomer pipe approx 4 feet under furnace floor
Downtime hrs due to leak/total:	Total downtime 48.5 hours
ESP?	ESP performed. Policy is to stay out of area 5 hours minimum
Classification:	**Non-critical**
How discovered:	Small stream of water observed flowing out of casing under the furnace.
Leak detection:	None installed
Sequence of events:	Fieldman performing normal duties observed stream of water. Fieldman consulted with the Helper and they could not determine source, and directed Panel Operator to ESP the unit.
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Poor weld ground out and rewelded
Root cause:	Poor field weld
Future prevention:	Similar welds will be x-ray inspected during October 2004 outage
Last full inspection:	Inspected September 2003. Cleaned August 1981 with 6% HCl acid

Fall 2004 – 36	
Location:	**International Paper, Roanoke Rapids, North Carolina**
Unit:	No. 7 Recovery Boiler. B&W Contract PR-168. Startup 1975. Smelt spout supplied by Andritz in 2004
Size:	2.8 million ppd solids. Steam flow 471,000 lb/hr. Operating at 825 psig & 825F. Design at 1000 psig. Two drum boiler / large economizer.
Incident Date:	August 23, 2004.
Leak/Incident Loc:	**Smelt Spout** – spout when removed had the outside channel plate unattached to the channels welded to the inner channel plate
Downtime hrs due to leak/total:	Total downtime 6 hr 20 minute
ESP?	No. Emergency trip was initiated.
Classification:	**Non-critical/smelt spout**
How discovered:	High spout cooling water temperature
Leak detection:	
Sequence of events:	During a trip on low drum level due to a steam swing, high spout water temperature of 209F was noted. Boiler purged and startup burners inserted. Initial inspection of spout area revealed a small trickle of water around bolting flange. Emergency trip initiated and building evacuated. On review of the event, building re-entered. Further inspection revealed a stream of water, about size of pencil, coming out of the spout. Water to spout shutoff and opening plugged. Boiler restarted to run until a planned outage.
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Replacement
Root cause:	Faulty spout fabrication as a probable cause being evaluated with Andritz
Future prevention:	Work with Andritz to ensure fabrication quality. Changes to spout cooling system for temperature control and assured supply of cooling water
Last full inspection:	

Fall 2004 - 37	
Location:	**Mead Westvaco, Charleston, South Carolina**
Unit:	Recovery Unit No. 1. B&W Contract PR-206. Startup 1984. Kvaerner installed rear economizer in Nov. 1995 and front economizer in June 1996
Size:	4.5 million ppd solids. Steam flow at 691,000 lb/hr. Operating t 1450 psig and 880F. Design at 1725 psig. Two drum boiler/ large economizer
Incident Date:	September 23, 2004
Leak/Incident Loc:	**Economizer** - longitudinal crack in 10th header from the right sidewall, 13th tube from the rear wall.
Downtime hrs due to leak/total:	Total downtime 32 hrs 20 minutes
ESP?	No
Classification:	Non-critical
How discovered:	Boiler developing high draft
Leak detection:	Acoustic leak detection system was in operation but did not detect nor confirm the leak
Sequence of events:	High draft loss maxed ID fan speed. Boiler operator sent to check for a leak, but found no evidence. Liquor flow reduced to alleviate high draft. Liquor guns had all been removed when Supervision arrived in morning and Foreman and engineer sent to investigate. Opened doors to expose lower headers to disclose the leak.
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Weld overlay of defect
Root cause:	Fatigue - crack propagated from internal surface
Future prevention:	Continue to evaluate cost of replacing front and rear economizers
Last full inspection:	Unit inspected March 20, 2003, and acid cleaned Sept, 25, 2002

Fall 2004 - 38	**Critical Incident No. 607**
Location:	**Tembec Industries. Skookumchuck, British Columbia**
Unit:	ABB Contract No. CA 91105. Startup 1993.
Size:	3,490,700 ppd solids. Steam flow 463,200 lb/hr. Operating at 630 psig and 750F. Design at 900 psig. Single drum / large economizer
Incident Date:	July 21, 2004
Leak/Incident Loc:	**Furnace Floor** – 1/8 inch pinhole leak in area of original scallop bar location. Composite tube at pinhole location slightly bulged for 6 inch with radial cracks. Tube is next to left hand sidewall & 31" from rear wall.
Downtime hrs due to leak/total:	Total outage 108.45 hour, of which 107.5 hrs was due to ESP
ESP?	ESP performed. Irrevocable policy is to stay out of recovery area for 8 hours
Classification:	Critical Incident
How discovered:	Loud explosive noise was heard coming from furnace area
Leak detection:	None installed
Sequence of events:	At time of noise, ID fan was swinging to maintain furnace draft. Inspection of the spout area discovered sight glasses blown out on 2 of windboxes at LHS and LH Rear. No sounds or bed problems noted. Spoutman cleaned windboxes in suspect area and when supervisor inspected, a void was noticed in the smelt bed. Liquor was pulled and when supervisor inserted a bar through the airport, it came out wet with black liquor. ESP was initiated
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Removed and replaced 30" section of composite tube. Welds where accessible radiographed and dye penetrant checked.
Root cause:	Corrosion enhanced thermal fatigue from steam blanketing due to poor circulation. Thermal fatigue along the original location of the scallop bar membrane that was relocated in 2000.
Future prevention:	Circulation problem under review by manufacturer
Last full inspection:	Inspected June 2004. chemically cleaned in 1993 startup.

Fall 2004 - 39	**Critical Incident No. 608**
Location:	**Tembec Industries. Skookumchuck, British Columbia**
Unit:	ABB Contract No. CA 91105. Startup 1993.
Size:	3,490,700 ppd solids. Steam flow 463,200 lb/hr. Operating at630 psig and 750F. Design at 900 psig. Single drum / large economizer
Incident Date:	August 23, 2004
Leak/Incident Loc:	**Furnace floor –** ¼ in. internal crack adjacent to toe of previous weld repair on crown of floor tube next to right hand sidewall approx 32" from rear wall
Downtime hrs due to leak/total:	Total outage 170 hour, of which 157 hrs was due to ESP
ESP?	ESP performed. Irrevocable policy is to stay out of recovery area for 8 hours
Classification:	Critical Incident
How discovered:	Operator noticed unusual bed condition while viewing boiler bed camera
Leak detection:	None installed
Sequence of events:	At 1640 hrs, Control Room Engineer noticed unusual smelt be action in right rear corner of furnace. 1745 hrs- Inspection with liquor out of boiler. No obvious signs of tube leak. Liquor started to spray up occasionally as bed burned down. ESP initiated at 1804 hrs.
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Installed replacement tube. Removal of smelt bed for extended inspection. Additional tube 3rd from right hand sidewall replaced plus additional section of tube that failed.
Root cause:	Thermal fatigue along the original location of the scallop bar membrane that was relocated in 2000.
Future prevention:	Considering to modify circulation system supplying tubes adjacent to sidewalls
Last full inspection:	Inspected June 2004. chemically cleaned in 1993 startup.

Fall 2004 - 40	**Critical Incident No. 609**
Location:	**Weyerhaeuser, Kamloops, British Columbia**
Unit:	No. 2 Recovery Boiler. B&W Contract 68100. Startup 1972.
Size:	4.5 million ppd solids. Steam flow 730,000 lb/hr. Operating at 600 psig & 740F. Design at 850 psig. 2 drum boiler / large economizer
Incident Date:	August 25, 2004
Leak/Incident Loc:	**Boiler Bank** – 1/8" crack on toe of attachment weld in generating bank left wall tube to rear of mud drum. Attachment aligns the sootblower wall box sleeve in the wall.
Downtime hrs due to leak/total:	Total downtime 24 hours
ESP?	No
Classification:	Critical Incident
How discovered:	Operator walkdown with sootblowers off
Leak detection:	Non installed
Sequence of events:	Operator walking down the boiler heard a noise. Sootblower steam isolated and boiler taken off liquor to look into furnace and try to determine location.
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Crack ground out and tested to ensure crack completely removed. Dye penetrant tested after each pass of welding.
Root cause:	Stress crack at toe of weld
Future prevention:	Test other locations next outage.
Last full inspection:	Inspected June 2004. Chemical cleaned 2002 using EDTA

Fall 2004-INTL 1	**International Incident No. 1096**
Location:	**Frantschach Swiecie, Poland**
Unit:	Ahlstrom Contract (Finland). Startup 1991
Size:	3.2 million ppd solids. Steam flow 530,000 lb/hr. Operating at 840 psig & 825F. Design at 900 psig. 2 drum boiler/large economizer
Incident Date:	April 3, 2004
Leak/Incident Loc:	**Upper furnace –** 1/8" pinhole leak near weld joint between membrane bar and tube at No. 8 sootblower opening in sidewall
Downtime hrs due to leak/total:	Total downtime 55 hours
ESP?	No
Classification:	
How discovered:	Steam leak heard by operator during shift walkdown
Leak detection:	None installed
Sequence of events:	Operator heard hissing noise during walkdown. Noise continued with sootblowers off. Liquor firing was discontinued and oil used to burn out the bed
Bed cooling:	No
Wash adjacent tube:	Yes
Repair procedure:	Tubes at opening removed and replaced
Root cause:	Undetermined. Possibly due to poor weld quality
Future prevention:	All sootblower and inspection door openings will be inspected during next annual outage.
Last full inspection:	Last inspection August 2003

Fall 2004 – INTL 2	**International Incident No. 1097**
Location:	**Australian Paper, Maryvale, Victoria, Australia**
Unit:	No. 5 boiler. B&W contract No. 7105. Startup 1976. Andritz installed decanting floor in 1992
Size:	1.85 million ppd solids. Steam flow280,600 lb/nr Operating at 900 psig & 842F. Design at 915 psig. 2 drum boiler / small economizer / DCE
Incident Date:	April 5, 2004
Leak/Incident Loc:	Furnace Floor – creep type failure of floor tube adjacent to right sidewall approx 2.4 meters (8 ft) from rear wall. Composite stainless steel layer exfoliated from top of tube for area of 42 mm (1.7 in.) long by 17 mm (0.7 in.) wide. Tube thinned before failure. Overheating around failure area evident.
Downtime hrs due to leak/total:	Total downtime 192.8 hours
ESP?	ESP was performed.
Classification:	
How discovered:	Operator manually rodding to clear ports on South side of boiler and noticed water on rod when pulled from windbox..
Leak detection:	Leak detection system not installed
Sequence of events:	Area being rodded was blacked out and ports were plugged like "concrete". When port partially open, inspection with a flash light showed "a good stream of water running down". Sr. Operator & Shift coordinator agreed boiler should be ESP'd
Bed cooling:	No
Wash adjacent tube:	No
Repair procedure:	Replace tube section
Root cause:	Localized overheating of floor tube. May not have been covered before startup. Tube from header to rear wall slopes downward
Future prevention:	Cover floor to depth 200 mm with frozen smelt and/or limestone chips before startup. Final inspection by Recovery Superintendent. Limit time on auxiliary fuel during startup.
Last full inspection:	

Fall 2004 - Intl 3	**International Incident No. 1098**
Location:	**Carter Holt Harvey Tasman. Kawerau, New Zealand**
Unit:	Recovery Boiler No. 2. CE Contract No; CA 66107. Startup 1969
Size:	3.7 million ppd solids. 410,000 lb/hr steam flow. Operating at 700 psig & 750F. Design at 760 psig. 2 drum boiler with DCE.
Incident Date:	July 4, 2004
Leak/Incident Loc:	**No Leak**
Downtime hrs due to leak/total:	Total downtime resulting from ESP 98 hours 10 minutes
ESP?	ESP performed. Revocable policy is to stay out of area for 12 hours following an ESP
Classification:	
How discovered:	Not Applicable
Leak detection:	None installed
Sequence of events:	A 5.4 Richter Scale magnitude earthquake located 20 km from Kawerau resulted in a violent motion of the control room. Operator considered personnel out around the boiler and boiler to be at risk and initiated ESP. Personnel returned to control room to shutdown auxiliary equipment and to monitor ESP system.
Bed cooling:	No
Wash adjacent tube:	Not applicable
Repair procedure:	Not applicable
Root cause:	Earthquake
Future prevention:	Revising procedures to give operators a series of options
Last full inspection:	Inspected November 2003. Chemically cleaned 1996 with alkaline and acid wish passivation