

MINUTES OF MEETING

Crowne Plaza Hotel/Atlanta Airport

Atlanta, Georgia

April 2, 3, & 4, 2001

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

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REGULAR MEMBERSHIP

Organizations operating, manufacturing, or insuring chemical recovery boilers shall be eligible for Regular Membership. On written application, an eligible candidate may be elected to Regular Membership by a majority vote of the Executive Committee.

ASSOCIATE MEMBERSHIP

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

CORRESPONDING MEMBERSHIP

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

Bylaws - 3.1

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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

Fall	2001	--	October	8, 9, & 10
Spring	2002	--	April	15, 16, & 17
Fall	2002	--	October	7, 8, & 9
Spring	2003	--	April	7, 8, & 9

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

■ Past Chairman Lon Schroeder

BLRBAC has created its own WEB Site which is:

www.blrbac.org

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

BLRBAC MEETING NOTICE

COVER LETTER

General Information

REGISTRATION FORM

Print and mail to Said & Done with appropriate fees

CROWNE PLAZA HOTEL

Blocked room dates, pricing, address, hotel phone nos., alternate hotel information, etc.

SCHEDULE

List of Subcommittee activities on Monday & Tuesday

AGENDA

Reports given to Joint BLRBAC Meeting on Wednesday

DELTA AIRLINE

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

QUESTIONNAIRE

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

BLRBAC Publications

The following is the current status of the BLRBAC publications. Most of these are available at the **BLRBAC INTERNET ADDRESS** : www.blrbac.org

1. **Recommended Good Practice for Firing of Auxiliary Fuel in Black Liquor Recovery Boilers**, Published April 1967; revised November 1998
2. **Recommended Good Practice for Safe Firing Black Liquor in Black Liquor Recovery Boilers**, August 1982, revised March 2001
3. **Recommended Rules for Personnel Safety for Black Liquor Recovery Boilers**, approved April March 1996; revised April 7, 1997
4. **Recommended Emergency Shutdown Procedure (ESP) and Procedure for Testing ESP System for Black Liquor Recovery Boilers**, revised October 4, 2000
5. **Recommended Good Practice - Fire Protection in Direct Contact Evaporators and Associated Equipment**, October 1974 (out-of-print); presently being revised
6. **Instrumentation Check List and Classification Guide for Instruments and Control Systems Used in Operation of Black Liquor Recovery Boilers**, loose leaf, revised October 1999
7. **Waste Stream Advisory**, October 1999
8. **Recommended Training Program Guidelines for Black Liquor Recovery Boilers and Associated Systems**, April 9, 1997.

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* = Attended 04/01 Meeting

SAFE FIRING OF AUXILIARY FUEL SUBCOMMITTEE

Dave Streit* - Chairman

Buckeye Cellulose Corp.

P. O. Box 80407

Memphis, TN 38108-0407

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Barberton, OH 44203-0315
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Loveland, OH 45140
Tel: (513) 248-6761
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P. O. Box 2000
Campbell River, BC V9W 5C9
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Fax: (604) 2887-5478

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P. O. Box 275
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Rockwell Automation
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Alstom Power, Inc.
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2000 Day Hill Road
Windsor, CT 06095
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FM Global
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Alpharetta, GA 30005
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* = Attended 04/01

SAFE FIRING OF BLACK LIQUOR SUBCOMMITTEE

Len Erickson* -- Chairman (new)

Boise Cascade
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Mark Sargent – Co-Chair* (new)
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Loveland, OH 45140-7910
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* = Attended 04/01 Meeting

WASTE STREAM SUBCOMMITTEE

John Rickard* -- Chairman

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* = Attended 04/01 Meeting

WASTE STREAM SUBCOMMITTEE (Cont.)

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Birmingham, AL 35202-2607
Tel: (205) 872-6438
Fax: (205) 972-6300
seidelb@bek.com

* = Attended 01/04 Meeting

Those registered for the meeting were:

Abitibi-Consolidated

Strain, Frank, Fort Frances, Ont.

Alabama River Pulp

Moyer, Scott, Perdue Hill, AL

Alert Systems

Borske, Henk

Alliance Forest Products

Abrams, Larry, Childersburg, AL
Ivie, Madison, Childersburg, AL
Miller, Bryce, Childersburg, AL
Ridley, Larry, Childersburg, AL
Whitmire, Larry, Childersburg, AL

Alstom Power

Brown, Richard, Chattanooga, TN
Burton, Dave, Ottawa, Ont.
Farmer, Robert, Beverly, MA
Gadai, David, Windsor, CT
Gibowski, Steve, Pensacola, FL
Grasso, Bob, Vancouver, WA
Hennighausen, Rick, St. Paul, MN
Hollenbach, Dennis, Windsor, CT
LeBel, Mark, Windsor, CT
McQuiston, Fred, Mandeville, LA
Reis, Victor, Windsor, CT
Sweet, Matt, Windsor, CT
Young, Frederick, Chattanooga, TN

American Forest & Paper Association.

Grant, Thomas, Yonkers, NY

American International Group

Finelli, Robert, New York, NY
Mooney, Kevin, New York, NY

Andritz-Ahlstrom

Collins, Peter, Alpharetta, GA
Holm, Ralf, Alpharetta, GA
Kvist, Marko, Alpharetta, GA
Martin, Jim, Alpharetta, GA
Sopanen, Jari, Alpharetta, GA
Whitten, Scott, St. Marys, GA

Appleton Papers

Hunt, Barry, Roaring Spring, PA
Lafferty, Denny, Roaring Spring, PA
Walter, Bob, Roaring Spring, PA

Aracruz Celulose S.A.

Braz, Saulo, Brazil, SA
Hilbert, Volnei, Brazil, SA

Automation Applications, Inc.

McClain, Cliff, Exton, PA
Vigeant, Marc, Exton, PA

AXA Insurance Company

Abel, Frederic, France

Babcock & Wilcox

Alesandrini, John, Barberton, OH
Barna, Joan, Barberton, OH
Blazer, Phil, Charlotte, NC
Dickinson, Jim, Barberton, OH
Hiner, Larry, Barberton, OH
Kulig, John, Barberton, OH
Lance, Gail, Barberton, OH
Pifer, Greg, Barberton, OH
Sherlock, H. Bentley, Atlanta, GA
Yash, John, Atlanta, GA

Barron Industries

Gilmore, Tom, Birmingham, AL

Those registered for the meeting were:

Barron Industries

Ray, Allen, Birmingham, AL

BE&K Engineering

Seidel, Barry, Birmingham, AL

Blue Ridge Paper Products

Foulk, Andy, Canton, NC
Hennessy, Kevin, Canton, NC
Single, Steve, Canton, NC

Boise Cascade

Erickson, Leonard, Boise, ID
Zavadoski, Greg, St. Helens, OR

Bowater, Inc.

Higginbotham, Charles, Catawba, SC

Buckeye Technologies

Baker, Randy, Perry, FL
Streit, David, Memphis, TN

Buckman Laboratories

Olavessen, Len, Memphis, TN

Cenibra S/A

Santos, Sandro Morais, Belo Oriente, MG,
Brazil

ChemTreat

Kanney, Mike, Glen Allen, VA

Cianbro Corporation

Bragdon, Dana, Pittsfield, ME
Cross, Carl, Pittsfield, ME
Hall, Charles, Pittsfield, ME

CIMS Ltd

Young, Jim, Richmond, BC

Clement Consulting

Clement, Jack, Akron, OH

Clyde-Bergemann, Inc.

Jameel, M. Ishaq, Atlanta, GA

Crown Vantage

Blaylock, Tommy, St. Francisville, LA
Moss, John, St. Francisville, LA
Worsham, Charles, St. Francisville, LA

D&G Machine Products, Inc.

Tanguay, Eric, Westbrook, ME

Diamond Power Specialty

Bunton, Mark, Lancaster, OH
Moskal, Tom, Lancaster, OH

EIE Maskin AB

Bergmyren, Leif, Sweden

Electron Machine Corp., The

Jarrett, Gordon, Umatilla, FL
Vossberg, C. A., Umatilla, FL

Environmental Elements

Bringman, Lewis, Baltimore, MO
Holbrook, John, Baltimore, MD
Johnson, Deidre, Baltimore, MD
Petty, Jerry, Mandeville, LA
Phillips, Gary, Baltimore, MD
Shanahan, Dennis, Baltimore, MD

Eurocan Pulp & Paper

Stein, David, Kitimat, BC

Fastco Corporation

Hogan, Mark, Lincoln, ME
Smith, Scott, Lincoln, ME

Those registered for the meeting were:

Fluor Daniel Forest Products

Lewis, John, Greenville, SC
Oscarsson, Bo, Greenville, SC

FM Global

Bradshaw, Kevin, Plano, TX
Caughman, Bill, Batesburg, SC
Chase, Larry (Ret.), Franklin, MA
Cooke, Craig, Oconomowoc, WI
Jones, Carl, Bonney Lake, WA
Lamb, Ron, Parsippany, NJ
Lang, David, Parsippany, NJ
Lemay, Brian, Thornhill, Ont.
Matarrese, Rick, Alpharetta, GA
Mayer, Karl, Dallas, TX
Morgan, Rick, Plano, TX
Onstead, Jimmy, Plano, TX
Parrish, Dave, Norwood, MA
Polagye, Mike, Norwood, MA
Smith, Shawn, Alpharetta, GA

Fuel Tech., Inc.

Adamczyk, Jeff, Bel Air, MD

GA Dept. of Labor

Everett, Earl, Atlanta, GA
Hancock, Gerry, Atlanta, GA

Gaylord Container

Vinson, Robert, Bogalusa, LA

GeneralCologne Re

Freeman, Stuart, Atlanta, GA

George H. Bodman, Inc.

Bodman, George, Kingwood, TX

Georgia-Pacific

Burney, S. L., Atlanta, GA
DeCarrera, Robert, Atlanta, GA
Morency, Karl, Atlanta, GA
Smith, Roger, Atlanta, GA

Global Risk Consultants

Jackson, Christopher, Beaverton, OR
Smith, Andy, Atlanta, GA
Williams, Jeffrey, Atlanta, GA

Gulf States Paper

Duckworth, Marty, Demopolis, AL

Hartford Steam Boiler

Garfield, Michael, Lowell, ME
Hess, Ron, Buckhead, GA
Ledlow, Larry, Loxley, AL
McGee, Tim, Canton, GA
Williams, Roy, Jacksonville, FL

Heberer Consulting Services

Heberer, Norman, Augusta, GA

Hercules, Inc.

Durham, Virginia
Gaus, Jeff, Baton Rouge, LA
Robinson, James, Trevese, PA

Industrial Risk Insurers

Contino, Jamie, Atlanta, GA
Crawford, Ron, Toronto, Ont.
DiLeonardo, Lino, Toronto, Ont.
Franks, James, Atlanta, GA
Kanouse, Kurt, Vancouver, WA
Lynch, Joseph, Atlanta, GA
Vanden Hoek, John, Canada

Inland Container

Alexander, Elliott, Rome, GA
Arntson, James, Orange, TX
Bedwell, T. M., Rome, GA
Davis, Gary, Rome, GA
Williamson, Robert, Rome, GA

Those registered for the meeting were:

International Paper

Bessant, Jim, Georgetown, SC
Bridgeman, James, Roanoke Rapids, NC
Camp, Bill, Prattville, AL
Carroll, Billy, Roanoke Rapids, NC
Clay, Dean, Loveland, OH
Fuhrmann, Dave, Loveland, OH
Harts, Chuck, Riegelwood, NC
MacIntire, Wayne, Loveland, OH
Mayeaux, Ken, Memphis, TN
McCarty, Ronald (Ret.), Sandia Park, NM
Moore, Lloyd, Loveland, OH
Morgan, Preston, Loveland, OH
Ober, Brant, Georgetown, SC
Pridgen, James, Riegelwood, NC
Sargent, Mark, Loveland, OH
Schools, Todd, Franklin, VA
Vuoso, Jerry, Memphis, TN

Interstate Paper Corp.

Crosby, Phillip, Riceboro, GA

Irving Pulp & Paper

Burse, Walter, Saint John, NB
Mott, Dan, Saint John, NB

Jaakko Poyry

Lehtinen, Markku, Finland

Those registered for the meeting were:

Jacobs Engineers, Inc.

Rickard, John, Greenville, SC

Jansen Technologies

Dye, Ned, Kirkland, WA
Verloop, Arie, Kirkland, WA

John E. Cover Engineering, Inc.

Cover, John, Birmingham, AL

John Rusch Associates

Rusch, John, Metairie, LA

Kawasaki Heavy Industries

Sakaeyama, Osamu, New York, NY

Kellogg Brown & Root, Inc.

Adams, Wayne, Mobile, AL

Kimberly-Clark Corp

Ballard, Charles, Irving, TX
Chiasson, Mike, New Glasgow, NS
Kaufmann, Brian, Roswell, GA
MacDonald, Ray, New Glasgow, NS
Marshall, Ian, Millicent, Australia
Robinson, Barry, New Glasgow, NS
Speziale, Ted, Terrance Bay, ON
Ziegler, Jim, Terrance Bay, ON

Kvaerner Pulping

Campbell, Craig, Charlotte, NC
Geedy, Jim, Charlotte, NC
Gravel, Tony, Charlotte, NC
Hansson, Berth, Charlotte, NC
King, Dave, Charlotte, NC
Laakso, Ari, Charlotte, NC
Lebouthillier, Yvon, Laval, Que.
Sherrod, Hank, Charlotte, NC
Smith, David, Vancouver, Ont.
Treadway, Sondra, Charlotte, NC
Wasson, Eric, Charlotte, NC
Weikmann, John, Charlotte, NC

Liquid Solids Control

Sweeney, Michael, Upton, MA

Lumbermen's Underwriting Alliance

Boutin, Leopold, Dorval, Que.

Those registered for the meeting were:

Marsh, Inc.

Durham, Rick, Atlanta, GA
Orme, George, Portland, OR

Martech Engineering & Consulting

Marcinek, Fred, Snohomish, WI

Matrix Risk Consultants

Stephenson, Jerry, Miamisburg, OH

Mead Paper

Clark, Bruce, Rumford, ME
Daigle, Gary, Rumford, ME
Henriques, Fabian, Chillicothe, OH
Ja'arah, Majed, Stevenson, AL
Lindsey, Larry, Phenix City, AL
Sanders, Doug, Phenix City, AL
Suggs, Chris, Miamisburg, OH
Thompson, Craig, Escanaba, MI
Williams, Jimmy, Phenix City, AL
Young, Dan, Chillicothe, OH

Mechanical & Materials Engrg.

Meiley, Steve, Ramsey, NJ

National Board of BPVI

Sullivan, Bob, Columbus, OH

Norske-Skog Tasman, Ltd.

Clay, Peter, Kawerau, New Zealand
Mills, Paul, Kawerau, New Zealand
Norton, Bob, Campbell River, BC

Ondeo Nalco Company

da Silva Araujo, Fabio, Sao Paulo, Brazil
Diambri, John, Naperville, IL
Rajan, P. T., Jakarta, Indonesia
Suryatama, Tomy, Jakarta, Indonesia
Totura, George, Naperville, IL

P. H. Glatfelter Co.

Gentzler, William, Spring Grove, PA

Packaging Corp. of Amer.

Farris, Mike, Counce, TN
Ferrell, Larry, Valdosta, GA
Mott, Jay, Tomahawk, WI
Pedron, Lester, Counce, TN
Pope, Charles, Valdosta, GA
Sparbel, Brian, Tomahawk, WI
Stelling, John, Tomahawk, WI

Pope & Talbot

Rank, Patrick, Halsey, OR

Potlatch

DeCaigny, Robert, Cloquet, MN

Power Specialists Assoc. Inc.

Cummings, Tom, Somers, CT
Madersky, Lee Anne, Somers, CT
Madersky, Tom, Somers, CT
Popielnicki, Ted, Somers, CT
Ruth, Brian, Somers, CT
Zawistowski, Bob, Somers, CT

Process Engineering, Inc.

Almond, Charles, Birmingham, AL
Nolen, Ken, Pelham, AL

Pulp & Paper of America

Brockett, Peter, Berlin, NH

Rayonier

Ellis, Ken, Jesup, GA
Mallard, Wendell, Jesup, GA
Thompson, Wayman, Jesup, GA
Yeomans, Scott, Jesup, GA

Those registered for the meeting were:

Rick Spangler, Inc.

Spangler, Rick, St. Simons Island, GA

RiNan, Inc.

Pothier, Richard, Peabody, MA

Rockwell Automation

Jenkin, Fred

Rowan Williams Davies & Irwin, Inc.

Schuyler, Glenn, Guelph, Ont.

Sandwell Engineering

Husband, Dwight, Atlanta, GA

SAPPI Fine Paper

Aderman, Craig

Beasley, Jeff, Muskegon, MI

Carter, Michael, South Africa

Finnemore, Chris, Skowhegan, ME

Gibson, Angus, South Africa

Godin, Richard, Skowhegan, ME

Long, Dave, South Africa

McQuillan, Bill, Skowhegan, ME

Miller, Gary, Muskegon, MI

Smurfit Carton de Colombia

Cubillos, Jairo, Cali, Colombia

Franco, Daniel, Cali, Colombia

Smurfit Carton de Venezuela

Ledezma, Nelson, San Felite, Venezuela

Smurfit-Stone Container

Bernard, Francois, New Richmond, Ont.

Cotnam, Jim, Portage-du-Forte, Que

Craig, David, Hodge, LA

Elder, Hollis, Jacksonville, FL

Groome, Matt, Panama City, FL

Gunter, Carl, Brewton, AL

Hagins, Hank, Fernandina Beach, FL

Pate, Winston, Brewton, AL

Quarterman, Jim, Fernandina Beach, FL

Southern Environmental

Caine, John, Pensacola, FL

Cotton, Rick, Pensacola, FL

Gwaltney, Bill, Pensacola, FL

Hayes, Charles, Pensacola, FL

St. Anne-Nackawic Pulp Co.

Gregoire, C. Eldon, Nackawic, N.B.

Lamey, Bernie, Nackawic, N.B.

St. Laurent Paperboard, Inc.

Modr, Keith, West Point, VA

Stasuk Testing & Inspection Ltd.

Stasuk, David, Burnaby, BC

StoraEnso North America

Wouters, Matt, Wisconsin Rapids, WI

Temple Inland Forest Products

Baldwin, Ryan, Sugar Land, TX

Triple 5 Industries, LLC

Bryson, Trudy

Vroom, Larry, Yardville, NT

Westvaco

Andrews, John, Charleston, SC

Courtney, Mike, Charleston, SC

Downs, Lombard, Charleston, SC

Manigault, Louis, Charleston, SC

Weyerhaeuser

Carter, Larry, Pine Hill, AL

Dixon, Jim, Pine Hill, AL

Knowlen, Bruce, Federal Way, WA

Willamette Industries

Avery, David, Bennettsville, SC

Herring, Raymond, Campti, LA

Powell, Boney, Campti, LA

Slye, Tom, Johnsonburg, PA

Walker, Robert, Bennettsville, SC

orsham, Jesse, Bennettsville, SC

INTRODUCTION

BLRBAC's Chairman, Wayman Thompson, called the meeting to order at 8:00 a.m. on Wednesday, April 4th.

CHAIRMAN: Thank you, I don't know that I have ever seen a crowd quite this agreeable this early in the morning. Welcome, everyone, to the Spring 2001 BLRBAC General Meeting. I believe that all of you who have participated in the past have gotten a lot out of our meetings. We have a lot to cover this morning so I would like to get right down to the business section.

OLD BUSINESS

ACCEPTANCE OF MINUTES OF FALL 2000 – Wayman Thompson

We had some problems with the Minutes last session. I'm assuming that they were eventually distributed and everyone received a copy. Larry Abrams sent me one correction, which has been noted. The Minutes will be changed. Are there any other deletions, changes, or revisions to the Minutes? Seeing none, I would like to ask for a motion that the Minutes of the Fall 2000 Meeting be accepted incorporating the one revision? I have a motion. Seconded? All in favor of approving the Minutes, raise your right hand. Any opposed? The Minutes are now will stand approved incorporating the one revision.

NEW BUSINESS

1. NEW MEMBERS/REPRESENTATIVE CHANGES REPORT -- Larry Chase

The new member is Ron McCarty. He submitted an application and according to the By-Laws of BLRBAC retirees are allowed to become Associate Members. So the Executive Committee approved Ron as an Associate Member of BLRBAC.

MEMBERSHIP COMPANY NAME CHANGES

Alliance Forest Products US Corporation

Previously known as US Alliance Company

Norske Skog Canada Ltd.

Previously known as Fletcher Challenge of Canada Ltd.

Ondeo Nalco Company

Previously known as Nalco Chemical Company

Papiers Fraser, Inc.

Previously known as Industries James McClaren, Inc.

1. **NEW MEMBERS/REPRESENTATIVE CHANGES (Cont.)**

Shasta Paper Company

Previously known as Plainwell Shasta Paper Company

NEW REGULAR REPRESENTATIVE CHANGES

Alabama River Pulp

Scott Moyer replaces Steve Green as Representative

Bruce Gornto replaces Scott Moyer as Alternate Representative

Eastern Paper – Lincoln Mill

Dennis Sanborn replaces Daniel Harn as Alternate Representative

Industrial Risk Insurers

Jamie Contino replaces Thomas DeBeer as Representative

Joe Lynch replaces Daryl Fincher as Alternate Representative

Papiers Fraser, Inc.

Jean-Pierre Riffon replaced Robert Denis as Representative

Potlatch Corporation

Robert DeCaigny replaces Ken Jones as Alternate Representative

Weyerhaeuser

Larry Carter replaces Jules Gommi as Representative

Richard Burnette replaces Larry Carter as Alternate Representative

NEW ASSOCIATE REPRESENTATIVE CHANGES

Industra Engineers & Consultants

Todd Brooks replaces Kjell Stuvstad as the Associate Representative

Mechanical & Materials Engineering

Steve Meiley replaces Douglas Sherman as Alternate Associate Representative

1. **NEW MEMBERS/REPRESENTATIVE CHANGES (Cont.)**

NEW CORRESPONDING REPRESENTATIVE CHANGES

Severoslovenske Celulozky a Papierne

Jan Belko replaces Branistav Milla as Corresponding Representative
Vladimir Krajci replaces Jan Belko as Corresponding Alternate Representative

Ust-llimsk Wood Industrial Complex

Victor Olkhov replaces Victor Rudenko as the Corresponding Representative.
Yurij Raikhert replaces Anatoly Drobyshevski as the Corresponding Alternate Representative.

2. **SECRETARY'S REPORT** – Larry Chase

I would like to review the meeting attendance and break it down for you. We had 228 Advanced Registrations for this meeting and we had 53 At Door Registrations for a total of 281. There were approximately 30 people who did not pick up packages. Therefore, there were about 250 actual attendees at the meeting. Breaking that down, there were 38 paper companies represented; 11 insurance companies; five boiler manufacturers; 43 Associate Members and two guests of members. We had a good representation from off-shore again. There were 16 Corresponding Members registered for this meeting. They came from Brazil, Colombia, Finland, France, Indonesia, New Zealand, South Africa, Sweden, and Venezuela. So, we had attendance from all around the world.

We are still getting registrations to Said & Done at their old address on Neva Street. That just ends up with the person paying \$150 because they never receive the registration in time to make the Advance list. I just want to emphasize that we use the correct address for all correspondence, which is: Barbara Holich, 1005 59th Street, Lisle, IL 60532. That is right on the Registration Form. So make sure that whoever is sending out the Registration Form and appropriate funds looks at the form for the proper mailing address. Said & Done has also received checks without the Registration Form enclosed; therefore, you are asked to make sure that your registration is properly enclosed and the envelope properly addressed. BLRBAC is not responsible for late or improperly mailed registrations.

One more thing, the Registration for the October 8, 9 & 10, 2001, meeting will be on the WEB site by July 15th. We will have an e-mail issued to alert everyone when this is available. You should have plenty of time to get your Registrations ready for the fall meeting.

2. **SECRETARY'S REPORT (Cont.)**

SECRETARIAL SERVICES REPORT (Cont.) -- Barbara Holich

Although Representative and Alternate changes appear in the minutes, no changes are made to the official BLRBAC data base until a letter (written on company stationery and signed by management who has authority to grant permission to use company funds to attend BLRBAC) is received and which states who the new Rep. and Alt. are going to be. This letter must give the full name, BLRBAC position taken (Rep.; Alt.; Assoc. Rep.; Assoc. Alt. Rep.; Corres. Rep.; or Corres. Alt. Rep.) and mailing address of the designated person. Also, include any e-mail addresses if available. It is imperative that a written letter be received by the BLRBAC Secretarial Service whenever a designated Rep. or Alt. retires, resigns, dies, or can no longer fulfill their responsibilities as a BLRBAC Rep. or Alt. Rep. This letter should be written in a timely fashion to the BLRBAC Secretarial Services, c/o Mrs. Barbara Holich, BLRBAC Secretarial Services, 1005 59th Street, Lisle, IL 60532. The above also applies to Assoc. Reps. & Alt. Assoc. Reps. A phone call is appreciated because it makes me aware of the change, but remember, **no changes are made to the data base until an official, signed letter is placed in the BLRBAC files.** Your cooperation in this regard is greatly appreciated.

3. **EXECUTIVE COMMITTEE REPORT – Wayman Thompson**

The Executive Committee met yesterday with quite a bit of discussion about several items. Following up on what Larry said, we have made a decision as a committee and as an organization to now, starting after this meeting, eliminate mailing out of the Meeting Minutes. They will be posted on the WEB site. Once they are posted on the WEB site, a Notice will be sent via e-mail informing you that they have been posted. We posted the Meeting Notice electronically for the first time on the WEB and did not hear any adverse comments. (Registrations may not be mailed back electronically though because **NO REGISTRATIONS ARE ACCEPTED UNTIL THE APPROPRIATE FUNDS ARE RECEIVED**). In the future, do not expect to get mailed Meeting Minutes.

Along those lines we also had some discussion in the Subcommittee Chair Meeting about how to deal with clarification, I won't use the word as strong as "an interpretation", of questions to the Subcommittee regarding their documents and what the intent and the meaning of that was, and how best to respond to those questions as an organization. An ad hoc committee has been appointed to come up with a procedure to allow that transfer of information back whenever someone has a question to any of the subcommittee groups as to what as to what their intent of wording in the document means.

3 **EXECUTIVE COMMITTEE REPORT (Cont.)**

Hopefully, by the fall meeting we will have some procedure in place that will allow that to take place and we will be able to tell you how that is done. If you have a question, don't hesitate to give the Subcommittee Chair of that particular subcommittee a call. Raise your question with him or her. I'm sure you will get a response back. We are just trying to get some common methodology between the subcommittees as to how that will be handled.

Yesterday we reviewed a proposed revision to the *Safe Firing of Black Liquor* document. We have returned that to Len Erickson with comments. We also approved revision to the ESP Subcommittee wording and John Andrews will deal with that during his report.

Lastly, at one time there was a Steering Committee that was formed to assist the Executive Committee in various issues. One of the issues that needs to be addressed again is our By-Laws. Things have changed over time with that. There has been at least one Subcommittee formed that is not even reflected in the By-Laws now. The intent is to appoint another three person Steering Committee as has been done in the past to address those issues and also some of our Procedures Documents. It has been a while since they have been visited. They really need to be updated.

4. **TREASURER'S REPORT -- Tim McGee**

Presently our Treasurer's Report is as follows:

Checking Account:	\$13,158.47
Money Market Account	<u>25,861.78</u>
Total on hand of:	\$39,020.25

5. **SUBCOMMITTEE REPORTS**

5.1 **ESP SUBCOMMITTEE REPORT** – John Andrews
(see Attachments A- Incident List & B- Questionnaire)

The ESP Subcommittee met in Closed Session on Monday April 2, 2001 with 9 of 11 members present. During the Closed Session meeting, the Subcommittee accepted Jamie Contino of Industrial Risk Insurers as a member of the Subcommittee replacing Daryl Fincher who resigned from the Subcommittee due to a change in job assignments.

The Subcommittee met in Open Session on Tuesday April 3, 2001 with 10 of 12 members present and about 250 guests.

5. **SUBCOMMITTEE REPORTS (Cont.)**

5.1 **ESP SUBCOMMITTEE REPORT (Cont.)**

In Open Session, the Subcommittee reviewed the 20 North American and one International incident reports that had been received since the previous meeting. Of the 20 North American reports, there were no explosions reported during the last six months. Ten of the incidents were rated as Critical Incidents and ten were rated as Non-critical Incidents.

The one international incident was accepted for information and is not rated nor included in the Subcommittee database. Twelve of the leaks prompted an Emergency Shutdown Procedure by operations. An ESP was performed after discovery of all of the leaks listed as Critical Incidents except for the smelt spout leak. In that incident, the cooling water to the spout was shut off, which was the appropriate action.

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

Explosions: Only if discernible damage has occurred. This does not include incidents where there is only evidence of puffs or blowback alone.

With the new emphasis on damage, more attention will be given to the extent of damage and the amount of downtime for the damage repair (as opposed to total downtime that includes other activities).

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

Non-Critical Incidents: Those cases that did not admit water to the boiler cavity defined above.

Leak Locations

5. **SUBCOMMITTEE REPORTS** (Cont.)

5.1 **ESP SUBCOMMITTEE REPORT** (Cont.)

The leak locations that were reported are listed below and are also shown on a typical boiler cross section in Figure 1.

Critical Incidents

- 1 - Economizer
- 1 - Generating bank
- 2 - Screen Tubes
- 5 - Wall Tubes

1 - Spout Leak

Non-Critical Incidents

- 5 - Superheater
- 5 - Economizer

Root Cause

The root causes of the leaks reported can be summarized as:

- Cracking
 - 6 - Fatigue
 - 3 - Corrosion Fatigue
 - 1 - Stress Assisted Corrosion
 - 1 - Unknown
- Thinning
 - 3 - Corrosion
 - 1 - Mechanical Wear
- Other
 - 2 - Weld Quality
 - 1 - Mechanical Damage
 - 1 - Overheat
 - 1 - Water Erosion

How Discovered

The breakdown of how the leaks were discovered once again shows the importance of routine operator walkdowns. The use of leak detection systems is increasingly being reported in the incident reports. However, experience has generally shown that they do not take the place of operator observations but serve as an added tool for detecting and/or confirming tube leaks.

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

- 17 - Walkdown or Field Observation
- 2 - Control Room Instrumentation
- 1 - Leak Detection System
- 6 - Incidents with Leak Detection Installed
- 1 - Identified Leak
- 1 - Confirmed Leak

Figure 2 shows the number of Critical Incidents reported to BLRBAC each year. The data for 2001 to date contains only the incidents reported at the spring meeting (six months). It is interesting to note that even though the total number of reported incidents is lower than past meetings, the number of Critical Incidents is running about the same.

Figure 3 shows that the last smelt water explosion in the USA and Canada was reported in 1997 and there has not been an explosion of any type reported since 1999. This positive trend is reflected in Figures 4 and 5 as well. We all hope that this indicates improvement in operations throughout the industry as well as the positive influence of BLRBAC.

The Subcommittee greatly appreciates the effort that is put into filling out the Incident Questionnaires and would urge that the mills continue to support this valuable effort. It is especially valuable to include all pertinent information such as boiler diagrams showing leak locations and any reports of failure analysis to help the Subcommittee in their incident evaluation. The Subcommittee will continue to use diagrams and photos as visuals in presenting the incidents to the membership at the Open Session.

The Incident Questionnaire has been revised and is included with the meeting minutes. In addition, the most recent edition is available on the Internet at the BLRBAC web site www.blrbac.org. Please send completed questionnaires at least one month prior to the BLRBAC meetings since it takes a few weeks to compile the working list and get it published for the meeting handouts.

Send all Incident Questionnaires, including the boiler side view drawing or sketch with the leak well marked, to:

Jack Clement, Clement Consulting Inc.
563 Beaverbrook Drive, Akron, OH 44333-2818
Tel: (330) 865-9779; Fax: (330) 865-6960
clemetcon@cs.com

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

Notice to BLRBAC Representatives: Lost Incident Questionnaire! An e-mail tagged Recent Lo.zip was lost between October 8 and November 8, 2000, when Clement's Computer crashed during download. If anyone recognizes this file, it should be again e-mailed.

Post-ESP Procedures: The Subcommittee has been working to develop a guideline for Post-ESP Procedures. Karl Morency of GP has been heading up that effort and was not able to attend the meeting so there was no activity at this meeting. The Subcommittee is continuing to request that any mills currently having Procedures, Waiting Periods or Decision Trees forward those to (preferably by E-mail):

Karl Morency, Georgia Pacific
P.O. Box 105605; Atlanta, GA 30348
ktmorenc@gapac.com

Eight-Foot Level: The Subcommittee has been continuing to work on evaluating the eight-foot level for ESP valves. The objective is to minimize the lower furnace damage to recovery units by ensuring that the eight-foot level is adequate to provide proper tube cooling during and after an ESP. Calculations by the boiler suppliers have shown the possibility for flashing of the water below the eight-foot level to the point that remaining water level in the boiler is below the floor tubes. These calculations have been confirmed by data from measurement of water level after an ESP on some units. The data shows water levels to be generally at low levels of approximately the furnace floor elevation. Incident reports were reviewed from five units that have reported tube damage after an ESP and it was observed that damage occurred in cases where the bed is very high at the initiation of an ESP, and then slumps against the furnace wall after water is drained. The Subcommittee majority agreed that 'based on limited data, the Subcommittee perceives no reason to change the 8 ft. level' as an increase to 12' has no benefit. The Incident Questionnaire attached to the minutes has been revised to include a request for data on water level and any trend data from floor tube thermocouples following an ESP. The Subcommittee will continue to review the data as it is received.

Feed Water Coil Air Heaters: The installation of Feedwater Coil Air Heaters to supplement or replace steam coil air heaters has become more prevalent in the industry. The Subcommittee has proposed revisions to the ESP Guidelines with the intent to recognize the potential for leaks that may have the possibility for smelt water interactions. The proposed language does not attempt to address all the issues

concerning proper FWCAH

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

design. The following draft language was accepted by Executive Committee to include in Minutes and will be brought to the Full Membership for a vote at the Fall 2001 meeting. The language, when accepted, will be added to the “Background and Installation Notes Regarding the ESP” section of the ESP Guideline.

FEED WATER COIL AIR HEATER LEAKS Some configurations may allow water from a ruptured air heater tube to enter the furnace through combustion air ductwork. The potential for leakage to enter the furnace may be mitigated by the location of the feedwater air heater coil and design of the ductwork. The configuration may include a system of air duct low points and drains, water detection alarms, and if necessary air heater waterside isolation or a boiler ESP.

Guideline Clarification Requests: The Subcommittee reviewed two requests for clarification to the guidelines.

Backup Operation of Rapid Drain Valves: The Subcommittee is developing revised language to include in the ESP Guidelines to clarify the intent of the language contained in the last paragraph of Page 1 as it relates to operation of the Rapid Drain Valves. It is the current understanding of the Subcommittee that the general intent is to have an alternate means to initiate opening of the valves in the event that the ESP logic system fails to open the valves. This can be accomplished in several ways, including having a switch or switches for individual valves that can be accessed from a safe location or being able to access the valve motor starters from a safe location in order to initiate valve operation.

Alternate Drain Provision for “Flash-to Sky Systems: A request was made to clarify the requirements for the alternate drain provision required for “Flash-to Sky systems under the section “Atmospheric Vent” on Page 8 of the Guideline. The “Flash-to-Sky” system is expected to drain the boiler from the operating pressure in the required 20-25 minutes, however, the alternate drain system would not be expected to drain the unit in the required 20-25 minutes at reduced pressure. The Subcommittee will continue to review the issue to see if further clarification is needed.

Leak Locations
Spring 2001

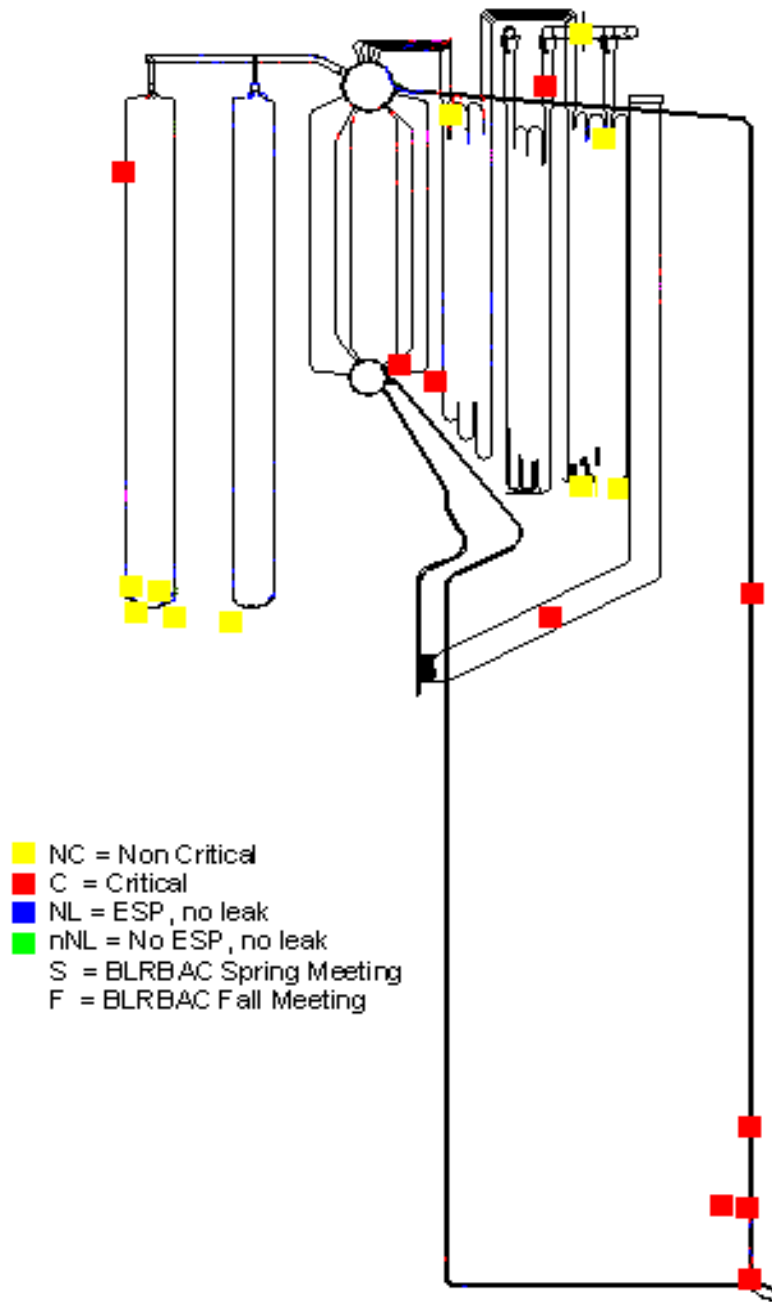


Figure 1

KRAFT RECOVERY BOILER CRITICAL INCIDENTS North America Pulp and Paper Industry

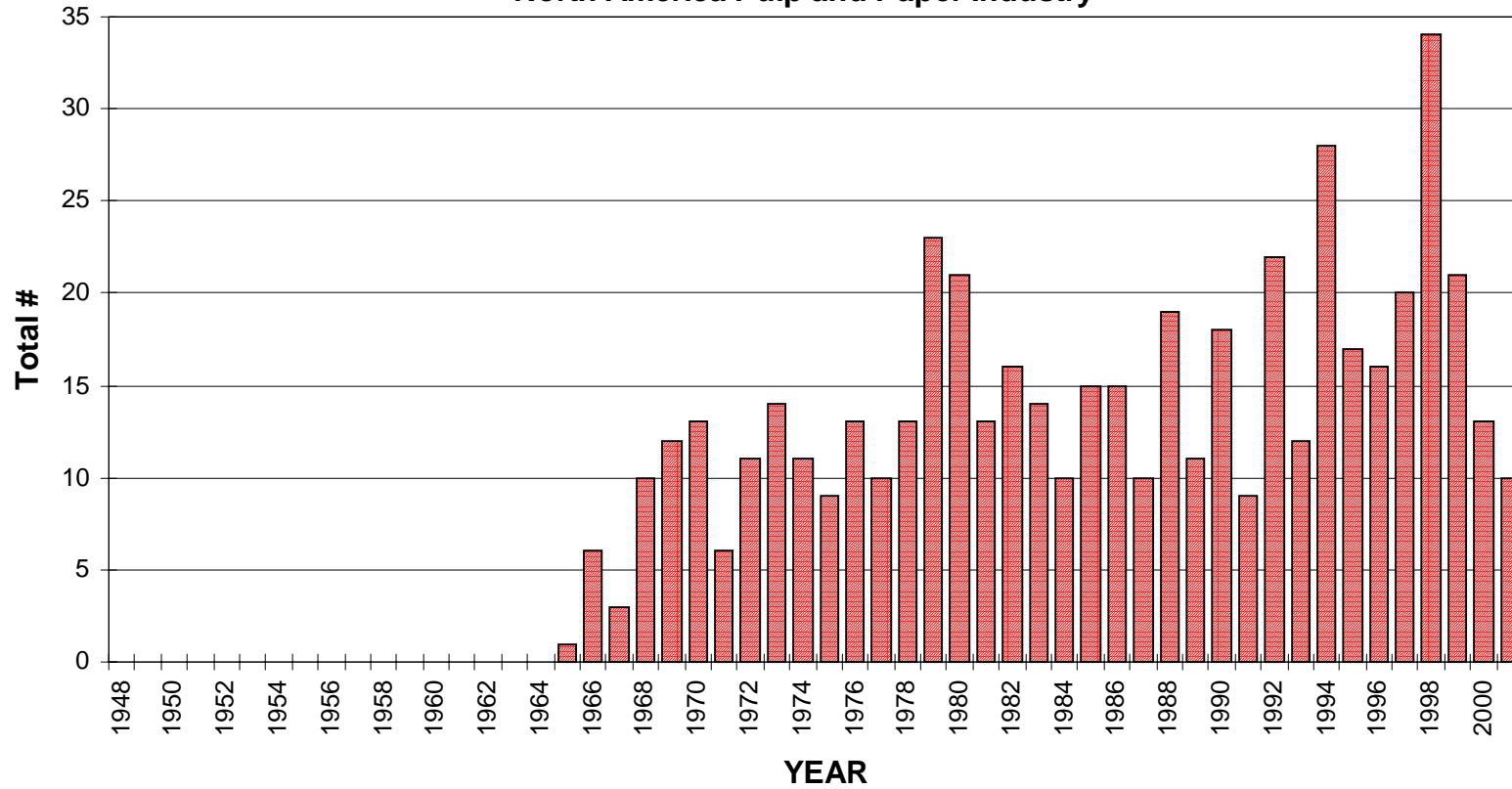


Figure 2

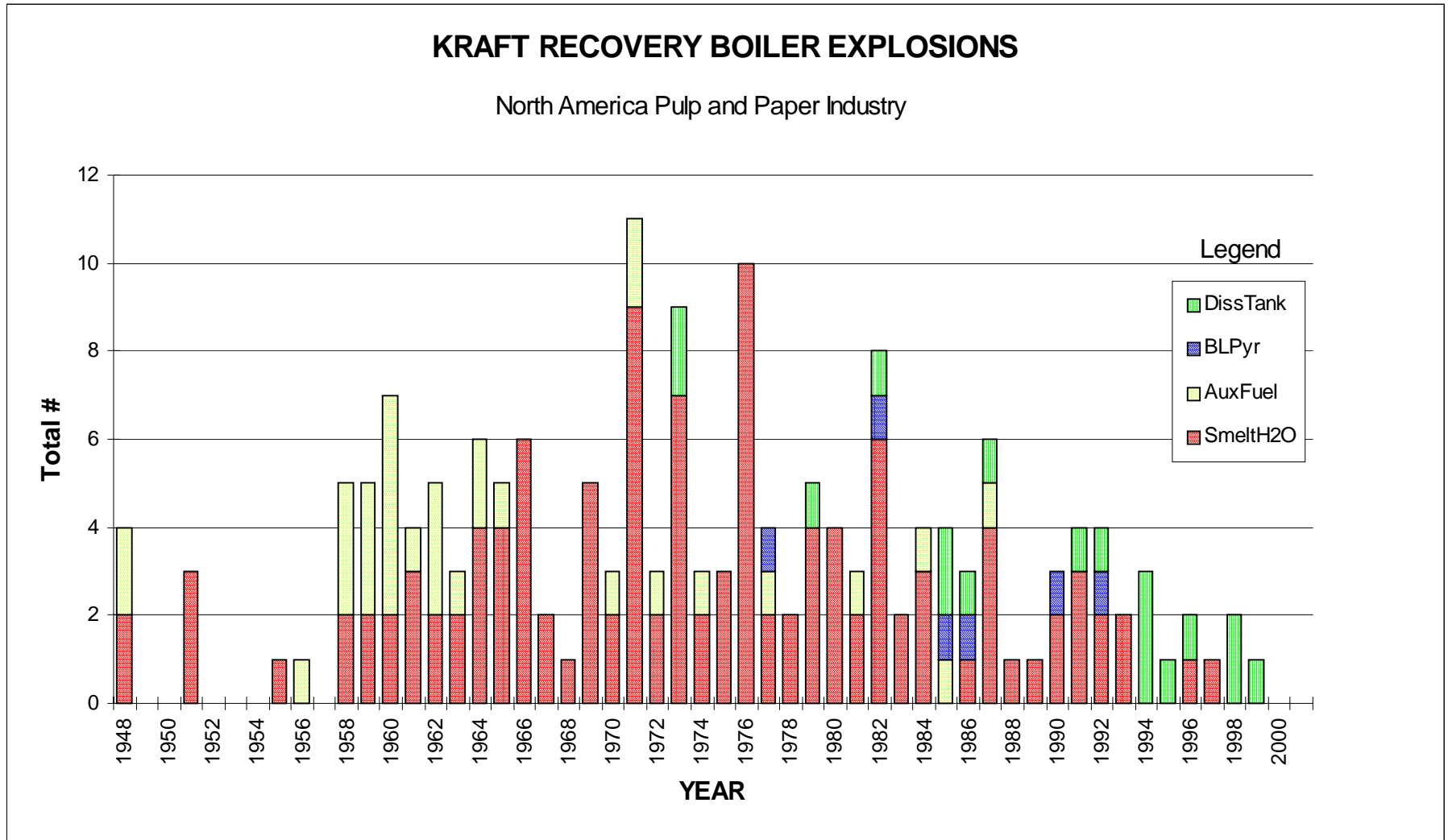


Figure 3

KRAFT RECOVERY BOILER EXPLOSIONS - Five Year Running Average

North America Pulp and Paper Industry

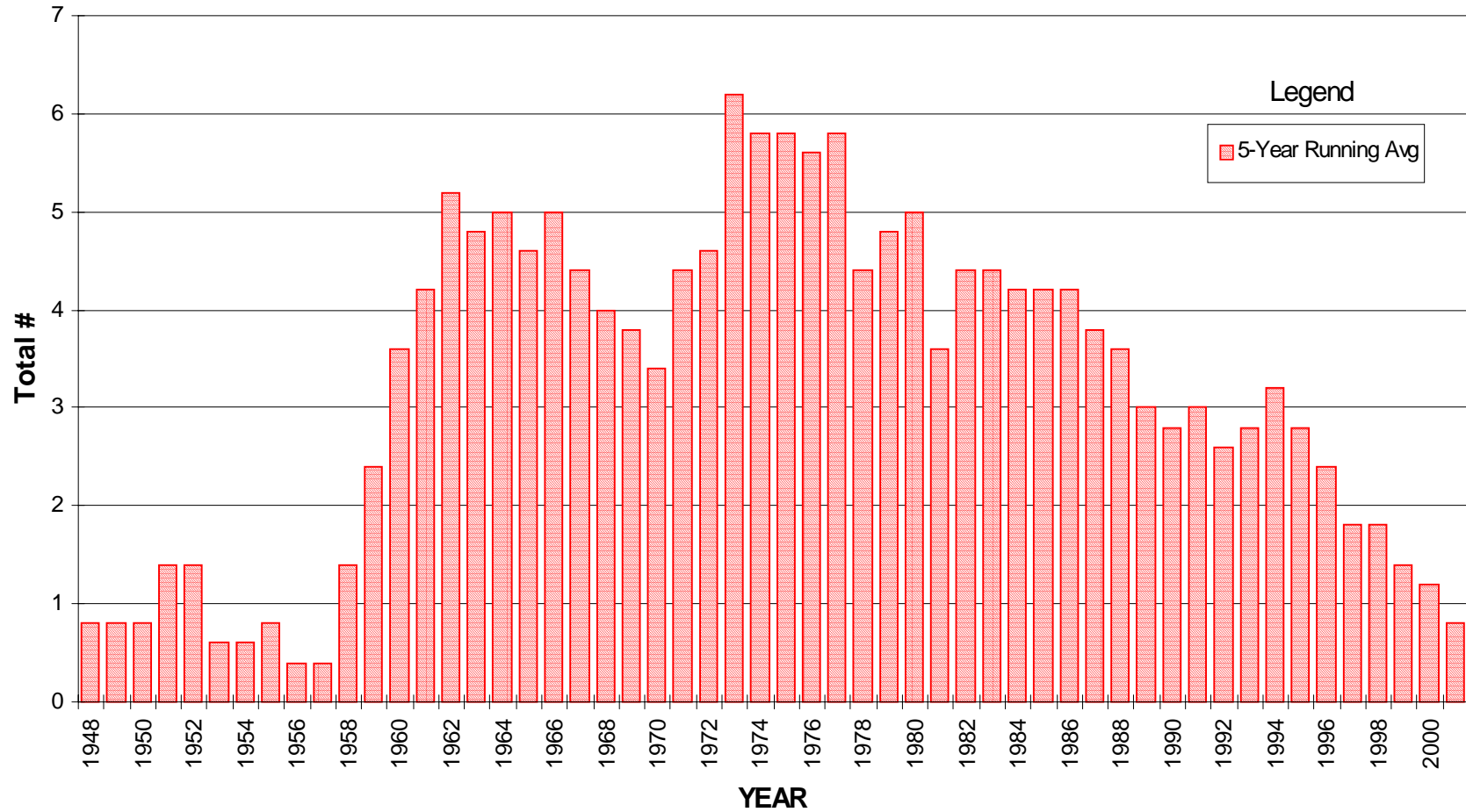


Figure 4

Cumulative Explosions per Cumulative Boiler Operating Years North America

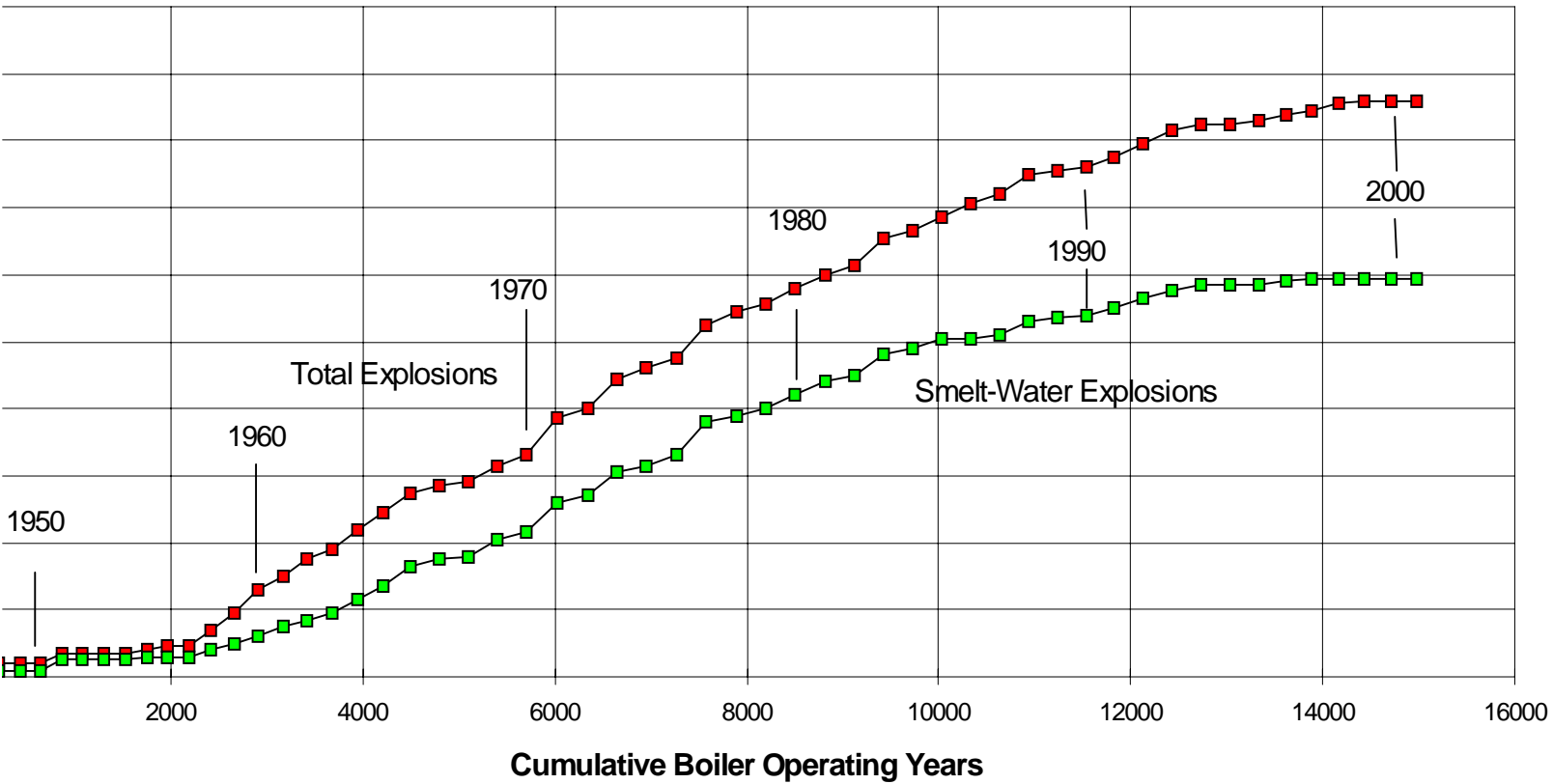


Figure 5

5. SUBCOMMITTEE REPORTS (Cont.)

5.2 FIRE PROTECTION IN DIRECT CONTACT EVAPORATORS AND ASSOCIATED EQUIPMENT REPORT – Chris Jackson for Jerry Vuoso

Jerry Vuoso could not attend due to a neck injury. He is healing and we look forward to his participation and leadership in the future.

The Subcommittee met in *Open* Session Monday morning with nine (9) members in attendance and 12 guests. We welcomed Joseph Lynch, as a new member, representing Industrial Risk Insurers, and excused Phil Ramsey from Westvaco, whose job change precluded his participation. Billy Carroll, Training Coordinator for the Roanoke Rapids IP mill, represented John Lisenby, Recovery Superintendent for that same mill, who could not attend.

It had been the intention of the Subcommittee to meet in *Closed* Session in the morning, but the change was not made soon enough and the published agenda indicated an *Open* meeting. The guests who showed up were asked to submit comments only when specifically asked and they accommodated the subcommittee.

Our afternoon meeting was *Closed*, with nine (9) members in attendance.

This Subcommittee has been charged with the task of updating the current document, which was accepted in 1974. Having surveyed the membership for incidents we have reassured ourselves that a document pertaining to Direct Contact Evaporators and their fire related hazards is still relevant.

It was decided early on to wipe the slate clean and re-write the document from scratch. A framework for the document has been established by the Subcommittee, which attempts to mirror existing documents in its format. It contains chapters on Prevention of fires, Fire Suppression Systems, and Fire Emergency Response. Additional sections will have drawings, the incident database, and a procedure for submitting an incident report, similar to the report requested for ESPs.

Task groups were assigned to address each of these chapters in part or in whole. Their work has been ongoing since last April, with many members making time to meet face-to-face, and we assembled Monday with high hopes that the pieces were ready to assemble into a complete document. We almost made it.

5. **SUBCOMMITTEE REPORTS** (Cont.)

5.2 **FIRE PROTECTION IN DIRECT CONTACT EVAPORATORS** (Cont.)

We began with a description by Dave Stein of the fire in Canada last year at a Eurocan mill. That fire, which did serious damage to the Precipitator and the ductwork between the Cascade evaporator and the Precipitator, was attributed to three things: a failed solenoid that did not operate to slow the ID fan; a clutter of panel alarms which loaded the operators with too much information to absorb in a short time, and the lack of soap handling stability.

Following this, the draft document was passed out to the committee members. Extra copies were available for review by the guests, and those copies never came back, so they're out there somewhere. With the unreviewed parts assembled into a single document, the committee went through it line-by-line, tightening the wording and assuring that the intended meaning was clear. Having established wording and order to three-quarters of the document, we wrestled with the recommendations of which fire suppression systems to recommend and what they would look like.

At three-thirty Monday afternoon it became clear to the members present that we had run out of time, and did not yet have a consensus on the wording relating to the design of fire suppression systems. What did we accomplish?

In the Chapter on Prevention we defined Safe Operating Practices, which included the establishment of Standard Procedures for both Normal and Upset Conditions, and the level of instrumentation and control expected. Desirable design characteristics and sensor location were spelled out. Routine Operator Checks are itemized with recommended frequencies. The wording of the guidelines for Inspection, Cleaning, and Maintenance is complete.

The chapter on Emergency Response addresses Training, Pre-planning, and emphasizes Personnel Safety. The incident report was noted to be long. We hoped to make the completion of the form more acceptable by emphasizing the benefits of finding strategies for loss control, and of providing guidance for improving the document.

We have taken pains to keep the wording concise and specific without limiting the use of new technology or exercising engineering ingenuity. We wish to provide a guideline that is substantial without requiring unreasonable expense and effort. We have tried to address all facets of both Cyclone and Cascade evaporators without becoming bogged down in minutia, but to assure that nothing is forgotten.

The Subcommittee adjourned with the intention of reworking the Chapter on Fire Suppression between now and October, at which time a complete document should be available for submission.

5. SUBCOMMITTEE REPORTS (Cont.)

5.3 INSTRUMENTATION SUBCOMMITTEE REPORT -- Bill McQuillan

The Instrumentation Subcommittee met in *Open* Session Monday morning and afternoon. We had 11 members and 30 guests present in the morning, as well as 11 members and six guests in the afternoon. We opened each session, as usual, offering to answer any questions from the floor on instrumentation as it relates to recovery boilers. This brought discussion on how to prove ID fan running logic other than zero speed, which was causing nuisance trips at one location. How to properly manage a jumper system or forces on recovery boiler safety system brought a lot of good discussion.

Items, which the Subcommittee members worked on this spring, included high drum level trip Classification 2. We had a request to remove this from our Check List last fall. After thorough review, it was decided to leave this item in our document. I'd like to emphasize to everyone that a Classification 2 item in our document is only recommended where applicable. If your boiler manufacturer, insurer, or company policy requires you to include a high drum level trip to protect superheater tubes or downstream turbines, then it would apply to you. This is quite different than a Classification 1, which is required for normal operation.

We spent a lot of time working on alternate means to actuate rapid drain valves if they failed to open when an ESP is initiated. In most all locations the motor control center where the rapid drain valve starters are located is in the restricted area from entry from an ESP. The hand wheel supplied on most of the electric actuator operated drain valve, which would be an excellent alternate means to open the valves, are also located in restricted from entry area. It seems that a group of switches in the control room will end up being the preferred method of the ESP Subcommittee.

We will be working with the valve-actuator manufacturers on the proper way to wire these back to the control rooms. We need to consider bypassing the torque switches in the actuators on the actual rapid drain, but allowing them in the circuit for monthly testing. We will be communicating with ESP Subcommittee for guidance on exact intent for this installation. I would invite anyone with interest in learning more details on this subject to our fall meeting, as there will again be an *Open* Session both morning and afternoon.

5. **SUBCOMMITTEE REPORTS** (Cont.)

5.4 **MATERIALS & WELDING SUBCOMMITTEE** -- Joan Barna

The Materials and Welding Subcommittee met in *Closed* Session with 23 members or substitutes in attendance. The meeting opened with a presentation by Dave Lang of FM Global on the newly formed Repair Subcommittee of the ASME Post-Construction Committee. The forum of this subcommittee, formed in 1999, parallels that of the Materials and Welding Subcommittee in that Task Groups are formed to address specific repair and materials issues. The topics of the various Task Groups within the ASME Subcommittee include blend grinding and excavation, pipe and tube crimping, repair of expansion joints and alternatives to post weld heat treatment. Dave will serve as a liaison between BLRBAC and the ASME Subcommittee.

Reports were made on the status of the Task Groups formed during the October 2000 meeting.

- **Removal, Repair and Installation of Header Hand Hole Caps**
Task Group Leader Dan Phillips submitted a draft of this document prior to the meeting and the document was provided to the Subcommittee members for review by July 1. It is intended that revisions are made and the document is reviewed again such that a committee vote can be made during the October 2001 meeting.
- **Installation of Tube Plugs**
Task Group Leader Joan Barna reported that there has been no activity on this project but that a document would be available for review at the October 2001 meeting.
- **Pad Welding of Carbon Steel Water Wall Tubes for Thickness Restoration**
Task Group Leader Jerry Stephenson and Max Moskal prepared a survey on recovery boiler pad welding practices that was submitted to the BLRBAC membership. Bob Sullivan volunteered to organize the results of the survey and will submit to the subcommittee membership prior to the next meeting, at which time a decision will be made as to how to proceed with the data.
- **Acceptable Size of Dents for Furnace Wall and Screen Tubes**
Task group leader Joan Barna reported that no standards on tube dents were submitted other than that used by B&W. This document will be reformatted and submitted to the Subcommittee for review prior to the October 2001 meeting.
- **Proper Procedures for Weld Terminations**
Task group Leader Brian Morgan was not present to provide a status report.

5. **SUBCOMMITTEE REPORTS** (Cont.)

5.4 **MATERIALS & WELDING SUBCOMMITTEE** (Cont.)

➤ **Materials Recommendations for Liquor Nozzles, Smelt Spouts and Shatter Jets**

Task Group Leader Joan Barna prepared a survey on these topics that was submitted to the BLRBAC membership. Dave Gadai volunteered to organize the results of the survey and will submit to the membership prior to the next meeting, at which time a decision will be made as to how to proceed with the data.

The format of the Recommended Practices for this Subcommittee will initially be a series of Chapters created as each Task Group completes the assignment.

No new topics for the Subcommittee to address were suggested and the meeting was adjourned.

CHAIRMAN: Thank you, Joan. As you have heard, there is a wealth of information that they are trying to deal with and if you listened to the ESP session yesterday, a lot of them are directly related to boiler uptime. So I would urge any of you with interest in that area to contact Joan and she will welcome your active participation.

5.5 **PERSONNEL SAFETY** -- Robert Zawistowski

The personnel safety sub-committee met in a *Closed* Session on Monday, April 2, 2001. There were 14 members in attendance. Representation included original equipment manufacturers Alstom Power, Babcock & Wilcox and Kvaerner. Representation from insurance companies included FM Global, Hartford Steam Boiler and Insurance Risk Insurers, Matrix Risk Consultants. Operating company representation included Georgia Pacific, International Paper Company and Mead Coated Board. Water treatment company representation included Buckman Laboratories. Consultant representation included Power Specialists Associates, Inc. and Rick Spangler, Inc. This sub-committee is still open if there are members who would like to participate.

The introduction of all members was followed by a review of highlights from the spring 2001 meeting.

Next, we discussed the topic of explosion corners in recovery boilers. The AF&PA Phase II study being conducted by Jack Clement and Tom Grace is still in progress and may be completed by the Fall 2001 or Spring 2002 meetings. Some of the guidelines developed by this sub-committee as it relates to explosion corners may be dependent upon information obtained from the AF&PA study. We will continue to maintain an open line of communication with this group and incorporate applicable operator safety information into our document as it becomes available.

5. **SUBCOMMITTEE REPORTS** (Cont.)

5.5 **PERSONNEL SAFETY** (Cont.)

A lengthy discussion was held on the topic of inspection/outage intervals. For the most part it was felt that the process is currently under control between the mills and insurance carriers. This subcommittee will obtain copies of established guidelines from insurance carriers and other organizations for review. However we are not in the process of drafting additional guidelines. It is our plan to continue monitoring inspection/outage intervals and evaluate what effects this may have on personnel safety. It was recognized that pressure from upper management to extend outage intervals will continue and needs to be monitored.

Several interpretations/clarifications of Personnel Safety Guidelines were reviewed. During this discussion a question was raised regarding BLRBAC's policy on interpretation and clarification. In order for each subcommittee to provide consistent information to membership questions it was felt that standard guidelines and policies should be followed. It was suggested that this topic be discussed during the Executive Committee meeting.

This topic was discussed during the Executive Committee meeting and it was agreed it needs further investigation. An ad hoc committee was formed to look into this issue.

The Recommended Guidelines for Personnel Safety in Black Liquor Recovery Boilers document was redrafted prior to the meeting. The training guidelines, which were in a separate document, have been incorporated into the main body of the document. As a group we edited about two-thirds of the redraft during this meeting.

A question regarding ESP system redundancy, as it relates to personnel safety was discussed. The question was "Is there a need to provide operators a means to activate ESP valves in addition to the ESP control system, for use during an ESP event, if the ESP control system fails to successfully activate a majority of the ESP valves?" As is stated in the BLRBAC ESP document, we feel that "Trained personnel should remain in the safe recovery boiler control room or other designated safe area to monitor and ensure completion of the ESP." and not enter the boiler area to open valves. We feel the direct answer to this question, or additional clarification, should initiate in the ESP subcommittee.

Editing and updating of the Recommended Guidelines for Personnel Safety in Black Liquor Recovery Boilers document will continue during the next meeting.

5.6 **PRESS RELEASE & PUBLICITY SUBCOMMITTEE REPORT** - Craig Cooke

No report was given at this time.

5. **SUBCOMMITTEE REPORTS** (Cont.)

5.7 **SAFE FIRING OF AUXILIARY FUEL REPORT** – Dave Streit

The Auxiliary Fuel Subcommittee met in *Open* Session on Monday afternoon in the Fitzgerald room. There were eight members/alternates and seven guests present at the meeting. Mr. Lino Di Leonardo has been designated as a new member on the Auxiliary Fuel Subcommittee representing Industrial Risk Insurers. Mr. Di Leonardo was not present for this meeting.

There were no agenda items carried over from the previous meeting, so the meeting was opened for general discussions and for new business.

There was discussion regarding the need for a formal process within BLRBAC for working interpretations when questions are asked about the “recommended good practice” documents. It was agreed that this issue would be brought up at the Executive Committee meeting with the subcommittee chairmen.

There was significant discussion regarding the need to have the up-dated document available on the web site. Changes to the document have been approved by the general membership on two occasions, but the document on the web site does not reflect the changes. Up-dates have been submitted for use in revising the document on the web site, but the changes have not yet been made. This item will also be worked with the Executive Committee.

A question was asked about the need for a high fuel oil pressure trip interlock. The question was asked because of numerous nuisance trips, usually in conjunction with other burner trips, and because high fuel pressure interlocks are not required uniformly in all standards. The subcommittee said the present document requires burners to trip if fuel oil pressure exceeds 125% of the maximum continuous rating pressure for the burners. This represents an approximate 10% above design fuel flow to the burners. This interlock keeps the auxiliary fuel burners from being over-fired in total or over-firing individual burners. It was the opinion of the subcommittee that this interlock is needed and the requirement should not be changed. It was suggested that a short time delay could be installed that would allow the pressure controller to bring the system under control before a trip occurred.

Mr. Tom Gilmore has served many years as the Auxiliary Fuel Subcommittee Secretary. Tom informed the subcommittee that this would be his last meeting. I would like to take this opportunity to thank Tom for his dedicated service over the years. His contributions have helped greatly in the success of the subcommittee.

5. SUBCOMMITTEE REPORTS (Cont.)

5.8 SAFE FIRING OF BLACK LIQUOR REPORT – Len Erickson

The Safe Firing of Black Liquor Subcommittee met Monday afternoon in *Open* Session with six members in attendance and approximately 70 guests. At this meeting the committee chair was transferred from Dean Clay to Len Erickson. I would like to thank Dean for his support and his work on the committee of the last number of years.

The committee nominated and voted Mark Sargent as Co-Chair. The members in the audience were advised that the current revised Safe Black Liquor document is now on the WEB site at www.blrbac.org.

The draft revision on how to avoid a dissolving tank explosion was forwarded to the Executive Committee for approval. We have received comments back and the committee will be reviewing those comments to see if we can make corrections. If possible, we will try to do that before the Minutes to out and attempt to get it for a vote for the general membership in the fall.

The floor was opened for discussion on possible changes to the Safe Black Liquor document and proposed logic to monitor the use of black liquor guns for water washing the lower furnace. This discussion centers on using the key interlock. A number of companies are using jumpers, however some have installed key interlocks. If the membership has any comments on this or has systems that they are using, the committee encourages you to send the details to the committee chair. I will forward it on to the committee member who is accumulating this information so that we can use this input at the fall meeting.

The second item that we had open for discussion is decreasing the manual liquor solids testing frequency. Currently in the *Recommended Practices for the Safe Firing of Black Liquor*, it is a requirement to test the Black Liquor solids manually a minimum of every two hours. There are a number of units that are operating in excess of 70% solids. The question brought to the committee was; can BLRBAC come up with a system where the testing interval can be increased to perhaps four, six or eight hours, (the number of tests per day would decrease). Comments would be appreciated.

If member companies would forward their opinion or comments on that to us, we will integrate that into our discussion at the fall meeting.

The Instrumentation Subcommittee asked the Safe Firing subcommittee to review the requirement to have no isolation valves between critical instruments and the process. NFPA and some other documents allow having isolation valves as long as they are controlled or locked, etc. Safe Firing is reviewing this recommendation and will work on proposed revisions to the wording.

5. **SUBCOMMITTEE REPORTS (Cont.)**

5.8 **SAFE FIRING OF BLACK LIQUOR REPORT (Cont.)**

No other new business was brought up and the meeting was adjourned after approximately one hour.

5.9 **WASTE STREAMS REPORT -- John Rickard**

The Waste Streams Subcommittee met in *Closed* Session at 8:00 AM on April 2, 2001 with 11 members present. James Franks with IRI joined the subcommittee.

After approval of minutes, we discussed feedback received on the present guidelines for NCGs. No one had heard comments on the guidelines; they must have served their users adequately.

There had been one question on the guidelines since the fall meeting. It concerned the thermodynamics of using a liquid ring pump for moving DNCGs.

Continuing our work on waste streams blended with black liquor, we debated the form of the guidelines. Following much discussion, we agreed that there would be a set of guidelines for each of the following streams:

- Soap
- ClO₂ spent acid
- Tall oil
- Tall oil spent acid
- Turpentine
- Methanol
- Secondary Sludge

Next, we developed the following outline to be applied to each named liquid waste stream.

- Definition of stream
- Safeguards (Differentiate between “musts” and “wants” clearly)
 - Where
 - When
 - How
 - Interlocks
 - Measurements
- Impacts
 - Heating value
 - Volatility
 - Corrosion
 - Combustion

5. **SUBCOMMITTEE REPORTS (Cont.)**
5.9 **WASTE STREAMS REPORT (Cont.)**

Four teams of subcommittee members were organized and the seven streams were divided between these teams. Each team will develop draft guidelines for their streams by Labor Day. Between Labor Day and the fall BLRBAC meeting we will review each other's drafts, anticipating compiling them during the fall meeting. The assignments are:

- Secondary sludge – Ned Dye and Barry Seidel
- Soap & ClO₂ spent acid – James Franks and Wayne McIntire
- Tall oil spent acid & tall oil – John Lewis and John Rickard
- Turpentine & methanol – Bill Caughman, John Caine and Craig Aderman

The instrument subcommittee provided us with a list of instruments required by our guidelines. Bill Caughman will review the list and comment.

The morning session adjourned for lunch and reconvened at 1 PM in an *Open* meeting. There were nine subcommittee members present and 13 visitors. We reviewed the results of the morning meeting and then the subcommittee members quizzed the guests about thermal oxidation of waste streams. We have an unquenchable thirst for knowledge concerning waste streams. Those of you who have a waste-stream-in-a-recovery-boiler story to tell, please share the story with us.

With the discussion subsided, the meeting was adjourned.

CHAIRMAN: Thank you, John. Again, as all of you have heard, all of these Subcommittees are dealing with real issues out there in the real world. All of these issues have impact upon your operations. Therefore, I would again urge any of you that have an interest to contact any of the Subcommittee Chairs or members and they would be more than willing to assist you in participating in their group.

6. **AMERICAN FOREST & PAPER ASSOCIATION REPORT -- Tom Grant**

The AF&PA Recovery Boiler Program is continuing in its mission to produce greater awareness of safe practices and to improve the operation, maintenance, safety and efficiency of recovery boilers. Each of the subcommittees is working in the same direction for the Program's mission.

Currently, we have 31 companies in the Program. This includes 2 non-AF&PA member companies. The Program & AF&PA agreed two years ago to allow non-AF&PA member companies to participate in the Program in the common cause of safe operation of recovery boilers so that all companies with recovery boilers may gain the benefits of the Program. There are 7 other companies that operate recovery boilers in the U. S. We are trying to have them join with the current members to cooperate in the common cause of the safe operation of the recovery boilers.

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

Operational Safety Seminars continue to be sponsored by the Operation and Maintenance Subcommittee in its efforts to further improve operations and maintenance. The seminars are sponsored in an effort to further minimize the risks of explosions and incidents. They have proven to be most helpful and informative by providing both formal and informal open forums for the discussion of problems and situations in the safe and reliable operation of recovery boilers. Three seminars were scheduled to be held this year. The one in Portland OR in March had to be canceled due to the limited number of registrations. Two other are planned in April and May here in Atlanta. Our expert monitors, Jules Dominguez, Tom Grace and Norm Heberer will be there to conduct and instruct in these sessions. We have had over 1,700 attendees at these seminars which have been sponsored by AF&PA since 1985.

Mr. Jack Clement is continuing his role as the AF&PA explosion monitor. He is also working with the BLRBAC ESP Subcommittee on collecting and reporting on recovery boiler incidents. Currently, he is working with Dr. Grace in a project sponsored by AF&PA to investigate the relationship between recovery boiler furnace design and explosion damage. Phase I of the project has been completed. Twenty explosions were selected for further investigation. The information in the files of the boiler manufacturers for these incidents is being reviewed to determine the relationship of damage to furnace design.

These are:

- Kvaerner in Sweden (Gotaverken design of boilers)
- Kvaerner in Finland (Tampella design of boilers)
- Ahlstrom - Finland
- Babcock & Wilcox
- Alstom Power in USA (ABB/CE boilers)
- CBC Brazil - one Gotaverken boiler furnace was rebuilt by CBC prior to the explosion

Mr. Clement reported on the status of the project at the Annual AF&PA Conference in February. He will be visiting the Kvaerner offices in Sweden and Finland next week to review the information on those explosions. The final report is expected to be completed by mid-year. The report will not make specific recommendations. It will comment on the level of risk associated with the damage potential of given designs. Mr. Clement noted that Combustion Engineering has used explosion corners since the 1970's. The current design started in 1975 covers from the nose arch to the roof on all but tangent tube and casing boilers.

The AF&PA Recovery Boiler Training Program continues to be of interest in many mills and many companies (members and non-members) are using this extensive information to their best advantage. The Committee feels that it is the best training program available and hopes that every mill has one and is using it for both beginners as well as experienced operators. AF&PA is planning to place the Training Program onto a CD shortly.

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

The book "Kraft Recovery Boilers," which was sponsored by the R & D Subcommittee and printed by TAPPI Press, continues to be of interest to all involved in the operation and maintenance of recovery boilers. It is considered to be most helpful to expert engineers as well as to the new people to the recovery area. The book may be ordered through TAPPI.

Significant progress has been made in another project sponsored by the AF&PA that is the Recovery Boiler Char Bed Cooling following an ESP. A successful completion of a full-scale test of the use of liquid CO₂ and sodium bicarbonate to cool a char bed during a simulated ESP at the Willamette Industries Albany, OR, mill was made in July. The test results confirmed the effectiveness of both of these coolants and provided detailed information on how they can be utilized. Dr. Tran submitted his report to AF&PA on the facilitating effective use of accelerated cooling methods. The next phase of the project involves experiments that will provide insights into how these coolants interact with bed material and help determine if either coolant has an advantage in penetrating a hard, crusted-over char bed, and help develop improved strategies for using coolants on char beds after an ESP. The results should also provide information on the use of bicarbonate for cleaning clogged smelt spout openings. The project is scheduled to be completed in mid-2002.

The Research & Development Subcommittee is considering sponsoring a project to develop a document on damage mechanisms. This project will proceed in full for the refining and fossil power industries because they have secured funds through API, PVRC and others to cover their industries. The pulp and paper industry will receive coverage to the same extent for its portion of the project. Another project under consideration for sponsorship by the Subcommittee involves identifying and avoiding operational conditions leading to flow anomalies in recovery boiler heat exchanger tubes.

An Energy Performance Task Group for Agenda 2020 is continuing to work to develop projects with a vision for the future. There are several projects currently underway with funding from DOE including gasification. The Sensors and Controls Task Group has several additional projects being funded by DOE that relate to recovery boilers. Others are being reviewed for possible future funding from DOE with cooperative research at universities, research institutions and at the corporate level. Proposals continue to be reviewed in the selection process by the Task Group.

The AF&PA's Environmental Group is actively working toward amending the Cluster Rules, MACT II Standards, air issues, hardpiping, NSR and other issues related to the recovery boiler operations. The AF&PA Environmental Group presented a comprehensive overview of its efforts to overturn the proposals that EPA had planned to put into effect by the end of last year. Significant progress has been made with these issues to aid the industry. The cost that was estimated to be \$3 billion in the next 3 years for U.S. mills to meet the standards was reduced to \$300 million with the work the AF&PA Environmental Group has done.

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

The AF&PA's Recovery Boiler Conference was held in February with a good turnout. The presentations included a good number of the projects underway relating to the Program such as an update on the Oak Ridge Advanced Materials for use in the boilers project; a report on the study of cracking of composite tubes in recovery boiler primary airports; a status report on the research projects in the Agenda 2020 program funding by DOE; a complete report on the work for the Bed Cooling following an ESP; the results of the investigation of the relationship between recovery boiler furnace design and explosion damage; as well as the subcommittee reports on their accomplishments. The object of the Conference is to keep not only AF&PA Recovery Boiler Program members informed of the status of current projects, but also boiler manufacturers, vendors, insurers, as well as the remainder of the recovery boiler community. We hope that many of you will plan to attend next year's Conference to be held in Atlanta in February.

Thank you for your attention.

7. **TAPPI RECOVERY BOILER REPORT - Karl Morency**

No report was given at this time.

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

Good morning. For general information on the National Board, I would like to announce that Albert Justin has retired from the Board as Executive Director effective March 31st. This is the first time we have had an Executive Director retire since 1919. Donald Tanner has been selected as the eleventh National Board Executive Director. His installation is effective as of April 1st. Monday was his first day on the job. Additional information on Mr. Tanner will be found on our WEB site” www.nationalboard.org

As announced in October of last year, the “*Pressure Relief Device Certification*” publication is now up and running on our National Board WEB site. The annual report of “*Incidents and Violation Tracking*” is now on the WEB site. Violations show 11% of the inspections made on boilers and pressure vessels had major findings. This is a clear indication of value of inspection. This item was brought up at the Personal Safety Subcommittee this Monday. It verifies the general thought that I got that inspections were important and the extension frequency needs to be looked at very carefully. The violation is a reference to code violation and means the boiler and pressure vessels ability to retain pressure is in question and affects the repairs.

For National Board Inspection Code activities, the 2001 edition of the NBIC will be published and distributed by August of this year. That edition will not have new revisions, but will be a compilation of all the addendums from the 1998 edition. The 2000 addendum

has been published and has been mailed out. Some of you, I'm sure, have received it.

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

The National Board Code Committee has approved the installation requirement as a non-mandatory appendix. That will be published in the December 2001 addendum.

For the paper industry, we are working with the TAPPI Subcommittee on unique driers to develop inspection and repair rules to be included in the NBIC due to the drier's uniqueness in the types of repairs, etc. Hopefully we will have something for the September meeting.

There are several new interpretations. I think one of special interest to this group would be 98-42, which states: "May weld build-up of boiler tubes be considered routine repair?" The answer came back as: "Yes, as long as the requirements of RC 2031 are met." This interpretation can also be found on our WEB site.

9. **WESTERN CANADA BLRBAC REPORT** -- Bob Norton (not given at the meeting)

The business meeting was held in Vancouver Hotel with most of the mills being represented. Jussi Mikkola from Ahlstrom will be retiring at the end of the year. John Schlogl from Canfor will retire on April 1, 2001

Submitted Incidents

- Economizer tube leak 1972, B&W circumferential crack at lower header
- Superheater leak, boiler ESP'd, cracks at the toe of top tie-weld in front of s/h platens, #8,9
- Economizer leak, circumferential crack at lower header
- Superheater tube leak, thinned bends, replaced 7 bends
- Economizer leak, pinhole leak
- Superheater tube rupture, center tube of the inlet to the final superheater pass sheared circumferentially at the roof penetration

The leak at Alberta shows that we need to be checking all tubes that go through the roof. There leak was a sheared tube just under the roof and they feel it was from swaying caused by the use of the high-energy sootblower nozzles.

CPPA report

The whole report will be included in the minutes but a couple of points that I thought were interesting

- Boiler contract jobs were being awarded on cost and safety records
- Some mills are using swipe cards for the contractors for record keeping

9. WESTERN CANADA BLRBAC REPORT (Cont.)

Eastern BLRBAC

- Mills are now tying in CO monitors to the “purge” cycle
- Smelt pumping is being used by the CE boiler design owners
- Mills trying for an annual shutdown are scheduling 9-10 down days of maintenance work
- More mills are looking at burning of NCG gases in the Recovery units

One BC mill is going to be controlling the whole Utilities plant from one control room. They are getting some push back as the operators want the people in the Recovery control room rather than the Power boiler control room.

The Alberta mills have been using a course from NAIT for the crews. This is a multi-skill training course and they pay some monies for completion.

The spring meeting will be held in Prince Albert, Saskatchewan
The next fall meeting will be Nov 7,8,2001 in Vancouver

Technical Papers

Alstom Jim Kearn

Gave a short presentation on generating bank design and some general comments on the “Hinton” failure. The point he tried to stress is that you have to remove ‘belly plates’ and inspect the generating bank tubes. Don’t assume you have no problems just by looking at a couple of tubes.

Andritz-Ahlstrom Rolf Holm

Reviewed smelting pumping as it was a question from one of the members present
Gave an update on the new boiler installation at Thunder Bay, Ontario

B&W Keith Rivers

Presentation on the selection of materials for a Recovery furnace to avoid cracking problems.

Kaeverner Dave Smith

Presentation on the past upgrade to the #6 boiler at Skeena cellulose. The boiler is operating above the predictions. Upgrade included a new air system with a new lower furnace. They are using the new EII port cleaners.

9. WESTERN CANADA BLRBAC REPORT (Cont.)

Round Table discussions

- FM is now looking at the 'remote shutdown' of a Recovery boiler. An example would be for us to be able to shutdown the Recovery from the steam plant.
- An Alberta mill is having lots of problems with primary port tube cracking and is working with B&W on material selection as well as air system balancing
- How many mills have redundancy for the ESP buttons? If the two buttons don't work when they are pushed, how do you ESP the boiler
- How many mills have rapid drain valves connected to an "UPS" system
- Some discussion on AQ trials, a northern mill adds caustic to cyclones if pH is below 11.5 to prevent lignin precipitation. Another adds 5-6 gpm of white liquor to the evap infeed to keep the pH above 11.5
- Two coastal mills are in the process of getting ready to burn NCG's in the Recovery boiler
- Lots of discussion on CO monitors, Bambeck, Thermox, Rosemount
- The FM insurance group is doing audits of all their mills and the recommendations for compliance need to be carefully reviewed. One area of concern from the group was the keys for bypassing the Aquarian on a low water situation

This was a good meeting with lots of discussion. This is the first time we have held the business session on the first day.

10. ACTIVITIES OUTSIDE NORTH AMERICA REPORTS

10.1 REPORT FROM FINLAND - Markku Lehtinen

➤ GENERAL

The year 2000 has been a busy year for the FRBC. We have had several research projects and sub-committees have been working actively.

Total number of the recovery boilers in operation in Finland is 22. Total black liquor firing capacity is 37 400 t ds/day, which equals 82 400 000 lb ds/day. The average boiler size is about 1700 t ds/day, which equals 3 700 000 lb ds/day. The average boiler age is 20.5 years.

➤ RECOVERY BOILER INCIDENTS IN FINLAND 2000

❖ Incidents

The FRBC ESP subcommittee has evaluated 14 incidents last year. No boiler explosions occurred.

Reported incidents:

10. **ACTIVITIES OUTSIDE NORTH AMERICA REPORTS (Cont.)**

10.1 **REPORT FROM FINLAND (Cont.)**

- 5 Economiser
- 1 Boiler bank
- 2 Superheater
- 2 Screen
- 2 Furnace
- 1 Smelt spout
- 1 Smelt leak from primary air register

Total down time was 600 hours.

One ESP was done at Heinola Fluting Mill. There was a small leak in boiler bank tube welding. A jet of water came out from leak damaged a tube beside. The tube thinned out and cracked off. The reason for the incident was a cold welding, which was not seen at the X-ray inspection.

❖ **Incident Data Base**

We have put all our incidents beginning of 1991 on the database, which can be reached through our home page. Totally there are more than 200 reported incidents. The mill can write the incidents report directly to the database via internet. Digital pictures and other information can be added to the incident report.

➤ **ACTIVITIES**

❖ **Research Projects**

The FRBC has normally three to five research projects simultaneously. Our partners have been Åbo Akademi University, Finnish Technology Agency, Central Laboratory KCL, Technical Research Center of Finland and some private persons.

List of ongoing projects:

Title: Sulfur emissions from evaporation plant

VTT: Pat McKeough

Title: New materials for the Recovery Boiler

HUT: Hannu Hänninen VTT: Pekka Pohjanne

10. **ACTIVITIES OUTSIDE NORTH AMERICA REPORTS (Cont.)**

10.1 **REPORT FROM FINLAND (Cont.)**

Title: Survey for the recommendation for odorous gas handling guideline

Jaakko Pöyry: Sebastian Kankkonen

Title: Reducing Nitrogen emissions from the liquor cycle

ÅA Mikko Hupa, Mikael Forssen, Maritta Kymäläinen

Title: Boiler leak detections systems and instructions for the boiler leaks.

Timo Karjunen

❖ **European Union Pressure Vessel Standards**

The new European Union Pressure vessel standard is going to final voting soon. The FRBC and the SNRBC has comment the standard. A new element at standard is requirement for Evaluation of Danger in the recovery boiler house. It is work that must be done by mill by its own personnel.

➤ **SWEDISH-NORWEGIAN RECOVERY BOILER COMMITTEE**

Main activities at year 2000 for the SNRBC has been

- Evaluation of 22 incidents
- New recommendations
- New education program
- International work

❖ **Recommendations**

Recommendations published during 2000:

- B17 – Recommendations regarding piping arrangements between evaporation plant and recovery boiler
- B12 – Recommended system for emergency power
- C10 – Recommended actions in case of divergent drum level
- F2 – Safety instructions for the recovery boiler area
- B7 - Recommendation regarding design and supervision of equipment for teletransmission of the water level in recovery boiler revisions in progress
- B2 – Construction of recovery boiler buildings
- B14 – Arrangements of alarms in operator rooms
- B19 – Equipment for liquor firing
- C3 – Firing of liquor and auxiliary fuels
- C9 – Firing for destruction

10. **ACTIVITIES OUTSIDE NORTH AMERICA REPORTS (Cont.)**

10.1 **REPORT FROM FINLAND (Cont.)**

- C11 – Leakage of gases and liquids
- D6 – Water side inspection and acid cleaning of feed water equipment
- D3 - Furnace tube measurements

❖ **Certification of operators**

This is their driver's license to operate the boilers. By the end of the year 2000, 504 operators had been certified. Totally 745 operators have entered the course. To be certified they have to pass the test.

10.2 **REPORT FROM SOUTH AFRICA – Dave Long of Sappi**

There are eight recovery boilers in Southern Africa. The Sappi organization owns and operates six of them in three locations; two of which are in South Africa and one is in Swaziland.

We have had a fairly loose relationship with the BLRBAC organization prior to 1997. Since 1997, as a result of a number of fairly serious loss incidents, we have taken the BLRBAC recommendations, stripped them apart, put them together again, and applied them on our six recovery boilers. I'd like to share with you the results that we have seen in the last five years.

These record the incidents at those six recovery boilers for the three mills. In 1997 we recorded 18 incidents; some serious, but quite a few of those representing economizer leaks. We started an audit program in May of 1997 and we've gone through almost two full cycles of auditing. Certainly we are very encouraged with the results. The last full year of 2000, we recorded six incidents and so far this year we have recorded just the one.

I think full credit is given to the standards that BLRBAC have provided to us and the energy and motivation that applying those standards to our recovery boilers has provided to both our operating staff and maintenance people. Given this success, we have taken the next step which is to make it a formal requirement that the BLRBAC recommendations are a requirement of our mills. We have made up a comprehensive auditing standard that attempts to take the full set of recommendations and split them into that which is mandatory. The Class 1 which comes out of the Instrumentation Recommendations and that which is recommended being the Class 2.

10. **ACTIVITIES OUTSIDE NORTH AMERICA REPORTS** (Cont.)

10.2 **REPORT FROM SOUTH AFRICA** (Cont.)

We have taken it a little bit further and placed the onus on our recovery boiler operations to apply for a concession for all those Class 2 that they choose not to apply with the result that we are hoping that we have full compliance to that which is mandatory and that which is recommended and the balance will be sitting in concessions.

It needs to be acknowledged that organization has provided us with a huge amount of benefit and I would encourage you to continue the good work. I think I speak on behalf of some of the rest of the world that this BLRBAC organization does set standards worldwide and certainly for those recovery boiler operations that subscribe to the BLRBAC standards. I would encourage every move that is made to attempt to get clarity and sort out any duplication that exist in the Recommended Good Practice. We would certainly support the subcommittee that was announced this morning that would clarify intent and interpretations. If there is one thing that has created more time and confusion in our organization, it is to try and understand what exactly you mean.

CHAIRMAN: Thank you, Dave. At times I'm not sure we know either. That was a very good report. Are there any other reports from off-shore. Again if you are from off-shore and would like to make a report, we would request, if possible, that you get your name on the agenda in a timely fashion by contacting Said & Done (e-mail: fhholich@aol.com) so we can make sure that you are allowed the time to make your report.

11. **OPERATING PROBLEMS SESSION REPORT** – Dean Clay

The Operating Problems Session was held on Tuesday afternoon. We kept it going for about an hour. Just to remind you we have a two-hour slot should you come up with any more discussion items. I'll just run quickly through some of the topics:

- Smelt spouts, including dry spouts and hoods.
- Dissolving tank
- Refractory and floor protection
- Leak detection
- Tube deposit, both waterside in the furnace and steam side
- Boiler water quality
- Operator training, discussing refresher training
- Burning soap, which did get a little interesting
- NCG streams, including liquid waste streams
- Turpentine and methanol

11. **OPERATING PROBLEMS SESSION REPORT** (Cont.)

Again at BLRBAC we are quite open to new ideas. If you want to submit anything to me via e-mail to be considered, I'd appreciate it. If you think of a question you want to discuss ahead of time, I'd be happy to accept it e-mail. I'd encourage you to provide a few more supporting details that might be discussed in addition to the simple question. It might bring up a little more conversation from the audience if they could understand the background and the level of concern a little bit better.

To divert just a little bit to Len's subcommittee, I just wanted to add a comment. The Safe Firing of Black Liquor document that is now on the WEB site is in an ACROBAT PDF form. It did come out to be a rather small file compared to some of the other files, so it won't take too long to download. But, just to let you know, it is a complete, new document. It is not just additional revised pages. If you go to print it, it is approaching 100 pages long. There is discussion in the Introductory pages on what has been changed in this edition and there is also a listing of pages so you could go to the individual pages. The document is not highlighted for the changes, but again they are discussed in a paragraph type format, on Page IV I believe. I certainly would encourage you, if you use the document, to download.

I'd also like to throw in a plug for our Technical Presentations. I believe Wayman is going to let us take about a 20-minute break after we finish here and then we will reconvene for the Technical Presentation. What we have are four presenters on leak detection systems, Alert systems, Hercules, Nalco and Triple5. The way we have it set up is they each have a very rigid time limit of 15-minutes. So we should be done with the presentations themselves in approximately one hour. Then the presenters will be available for questions after that, but we will try to control the time. So if you were worried about four presenters, hopefully, the time element is under control.

You should have received two papers as part of your pack. I believe there will be other papers that will be outside on a table by the door. Additional copies of the papers you have are available if you want more.

TIME & PLACE OF NEXT MEETING: The next meeting will be held on October 8, 9, & 10, 2001, at the Crowne Plaza Hotel/Atlanta Airport, in Atlanta, Georgia.

ADJOURNMENT: Are there any other questions or comments, which need to be addressed? If not, this meeting is adjourned. Everyone have a safe trip home!

INCIDENT LIST – ATTACHMENT A

<p>2001 April – 1 Location: Unit: Size: Incident Date: Leak/Incident Loc: Downtime hrs due to leak/total: ESP? Classification: How discovered: Leak detection: Sequence of events: Bed cooling: Wash adjacent tube: Repair procedure: Root cause: Future prevention: Last full inspection:</p>	<p>Willamette Industries, Inc., Johnsonburg Mill, Johnsonburg, Pennsylvania Tampella Contract No. 90132. Start-up 1993. 2.2 million ppd solids. Operating @ 1250 psig & 900F. Design @ 1600 psig. Single drum. Large economizer. August 14, 2000 Economizer-Corrosion fatigue cracking initiated from the internal surface. Final economizer bank in gas stream. Crack in weld in shop attachment weld of tube to header. Stereoscopic examination revealed internally initiated cracks in 6 of the 13 welds Total downtime- 36.14 hours No ESP Non-critical Operator noticed water in the economizer hopper during a routine walkdown None installed Notice of water during the walkdown was suspected as originating in the economizer because of a history of leaks. Liquor firing was stopped and a visual inspection revealed a wet area on the economizer. The boiler was shutdown. None used No Removed the entire header and capped the upper and lower connections to the platen. Corrosion fatigue cracking caused by a combination of thermal expansion of the long tube and the cantilever effect on the sloped portion of the tubes. An extended outage will be taken to x-ray & shear wave test the welds, repair where required, and reinforce welds. Replace the economizer when the floor tubes are replaced in the future. NDT inspection in May 2000. Acid cleaned in 1993 at start-up</p>
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INCIDENT LIST – ATTACHMENT A

<p>2001 April – 2 Location: Unit: Size: Incident Date: Leak/Incident Loc: Downtime hrs due to leak/total: ESP? Classification: How discovered: Leak detection: Sequence of events: Bed cooling: Wash adjacent tube: Repair procedure: Root cause: Future prevention: Last full inspection:</p>	<p>APRIL 3 UPDATE IN ITALICS Willamette Industries, Inc., Johnsonburg Mill, Johnsonburg, Pennsylvania Tampella Contract No. 90132. Start-up 1993. 2.2 million ppd solids. Operating @ 1250 psig & 900F. Design @ 1600 psig. Single drum. Large economizer. October 31, 2000 Economizer-Corrosion fatigue cracking initiated from the internal surface. Final economizer bank in gas stream. Crack in lower weld of small end of reducer to the supply pipe. Total downtime-35.6 hours No ESP Non-critical Operator noticed water in the economizer hopper during a routine walkdown None installed Notice of water during the walkdown was suspected as originating in the economizer because of a history of leaks. Liquor firing was stopped and a visual inspection revealed a wet area on the economizer. The boiler was shutdown in an orderly manner for repair of the weld. None used No Crack ground out and repaired An outage in September 2000 resulted in shear wave testing and reinforcement of all welds of the large end of reducers to the manifold. Small end was not reinforced <i>No agreement on corrosion mechanism</i> Reinforce the additional welds during a May 2001 outage. Future replacement of economizer <i>Weld reinforcement has been effective; since this 14th leak, no more have occurred. There has been a leak at unreinforced large end of reducer, and these welds will all be reinforced.</i> NDT inspection in May 2000. Acid cleaned in 1993 at start-up</p>
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INCIDENT LIST – ATTACHMENT A

<p>2001 April – 3 Location: Unit: Size: Incident Date: Leak/Incident Loc: Downtime hrs due to leak/total: ESP? Classification: How discovered: Leak detection: Sequence of events: Bed cooling: Wash adjacent tube: Repair procedure: Root cause: Future prevention: Last full inspection:</p>	<p>Tembec Industries Inc., Skookumchuck, British Columbia No. 2 Recovery Boiler. ABB Contract CA91105. Start-up 1993. 3,490,700 ppd solids. Operating @ 630 psig & 750F. Design @ 900 psig. Single drum. Large economizer August 27, 2000. Economizer- Repeat failure of a circumferential crack in a tube weld connection to 14" OD lower header (feedwater inlet) of economizer bank. Total downtime-22.5 hours No ESP Non-critical By the supervisor walking down the boiler. None installed None No Crack ground out and repaired using 3 passes of filler rod. Stabilizer bars installed on economizer tubes Vibration of long flow economizer tubes is suspected Stabilizing bars (Vibration restraints were installed in unit pre-startup, but were not adequate. June 1999. Chemical cleaning during 1993 start-up</p>
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INCIDENT LIST – ATTACHMENT A

(1st is “List ...”, then filled in becomes “Summary ...”

<p>2001 April – 4 Location: Unit: Size: Incident Date: Leak/Incident Loc: Downtime hrs due to leak/total: ESP? Classification: How discovered: Leak detection: Sequence of events: Bed cooling: Wash adjacent tube: Repair procedure: Root cause: Future prevention: Last full inspection:</p>	<p>CRITICAL INCIDENT NO. 530 Longview Fibre Co., Longview, WA No. 18 Recovery Boiler. CE Contract No. 2964. Start-up 1965. ABB-CE revamp Contract 72696 in 1997. 2.1 million ppd solids. Operating @ 825 psig & 750F. Design @ 859 psig. 2-drum boiler, small economizer & DCE. November 15, 2000 Economizer- 1/8 inch pinhole in right-rear corner tube of original economizer at a buckstay attachment weld. This tube is routed from inlet to outlet header for rear enclosure cooling and is not in the bank. Total downtime – 24 hours-40 min. ESP was initiated. A leak in upper economizer could result in water passing the single crossflow pass, baffless boiler bank and entering the furnace Critical Incident. Water from leak location could possibly pass through the generating bank into the furnace. There was no evidence that this occurred. Fireman helper observed water dripping from the economizer casing when making rounds None installed Helper checked for external source of water and found none. All recorded signals in control room showed normal. Fireman joined Helper. Economizer access door opened and water droplets in gas stream observed. Fireman returned to control room and initiated ESP None No Replaced a 3 ft. length of tube Stress assisted corrosion Economizer scheduled for replacement in 2001 1999</p>
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INCIDENT LIST – ATTACHMENT A

<p>2001 April – 5 Location: Unit: Size: Incident Date: Leak/Incident Loc: Downtime hrs due to leak/total: ESP? Classification: How discovered: Leak detection: Sequence of events: Bed cooling: Wash adjacent tube: Repair procedure: Root cause: Future prevention: Last full inspection:</p>	<p>Skeena Cellulose Inc., Prince Rupert, British Columbia No. 5 Recovery Boiler. B&W Canada Contract 5855. Start-up 1966. Revamp 1990 by Jansen 3.6 million ppd solids. Operating @ 600 psig & 750F. Design @ 750 psig. 2 drum boiler, large economizer. August 24, 2000 Economizer- leak in tube #62 in 1st row at bottom of economizer at a seal block location 7/8 Inch below hopper plate. An apparent pin hole leak turned out to be a crack 2" x 1/8" N/A No ESP Non-critical Leak observed below chemical ash hopper and confirmed to be feedwater quality with a 'drip test' that detected 8.1 ppm PhO₄ None installed With confirmation of a leak, the boiler was shutdown, bed burned out and locked out None No Tube cut out and plugged in upper and lower headers Not determined October 1999</p>
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INCIDENT LIST – ATTACHMENT A

<p>2001 April – 6</p>	<p>Note: Nos. 5 and 6 out-of-sequence to place dates in chronological order in Summary</p>
<p>Location:</p>	<p>Skeena Cellulose Inc., Prince Rupert, British Columbia</p>
<p>Unit:</p>	<p>No. 5 Recovery Boiler. B&W Canada Contract 5855. Start-up 1966. Revamp 1990 by Jansen</p>
<p>Size:</p>	<p>3.6 million ppd solids. Operating @ 600 psig & 750F. Design @ 750 psig. 2 drum boiler, large economizer.</p>
<p>Incident Date:</p>	<p>August 15, 2000</p>
<p>Leak/Incident Loc:</p>	<p>Economizer- 6 in. long crack in sidewall tube. Crack in 3rd tube from front, 20" below centerline of mud drum to bottom of crack. Post-repair hydro disclosed superheater tube leaks. Lower return bends of 7 superheater loops were determined to be thinned and were replaced; 5 primary and 2 at secondary superheater inlet. Five leaked on the initial hydro.</p>
<p>Downtime hrs due to leak/total:</p>	<p>N/A</p>
<p>ESP?</p>	<p>No ESP</p>
<p>Classification:</p>	<p>Non-critical</p>
<p>How discovered:</p>	<p>None installed</p>
<p>Leak detection:</p>	<p>Water observed and boiler shutdown</p>
<p>Sequence of events:</p>	<p>Water observed and boiler shutdown</p>
<p>Bed cooling:</p>	<p>No</p>
<p>Wash adjacent tube:</p>	<p>No</p>
<p>Repair procedure:</p>	<p>Membrane between tubes removed from the crack location , crack ground to form a v-groove the depth of tube wall, groove surface ground, weld passes applied for closure.</p>
<p>Root cause:</p>	<p>Not determined</p>
<p>Future prevention:</p>	<p>October 1999</p>
<p>Last full inspection:</p>	<p>October 1999</p>

INCIDENT LIST – ATTACHMENT A

(1st is “List ...”, then filled in becomes “Summary ...”

<p>2001 April – 7 Location: Unit: Size: Incident Date: Leak/Incident Loc: Downtime hrs due to leak/total: ESP? Classification: How discovered: Leak detection: Sequence of events: Bed cooling: Wash adjacent tube: Repair procedure: Root cause: Future prevention: Last full inspection:</p>	<p>International Paper Company, Prattville, Alabama Recovery Boiler No. 1 (RB1), CE Contract No. 1965. Start-up in 1967. 2.1 million ppd solids. Operating @ 850 psig & 830F. Design @ 900 psig. 2 drum, small economizer, DCE October 26, 2000 Economizer- a pinhole leak washed an adjacent tube, which resulting in a 1-1/2 in. by 1/2 in. D-shaped rupture. Leak was 3 ft. above the inlet header, 13 tubes in from the right side. Total outage time-58 hours, 35 minutes. ESP performed Non-critical An Economizer Imbalance Alarm sounded Nalco mass balance Trasar system (RBLI) in operation. Pinhole to small to detect. Alarmed when adjacent tube ruptured. The economizer water flow is measured by orifice at the inlet and the outlet Operator responded to alarm and observed that the feedwater and steam flow differential was excessive. Drum level was down substantially and feedwater flow “off chart”. Boiler ESP’d. None Pinhole leak washed adjacent tube to failure Two economizer tubes plugged Stress fatigue failure at termination of squared off fin attachment to tube. Similar failures have occurred and modifications to fix the problem have not been successful. The first pinhole leak was not visually obvious. Tube filled with water and leak still not detectable. Require dye penetrant to find the hole. Only fix appears to be replacing the 33 year old economizer Hydrostatic test 2 weeks before leak. Chemically cleaned 12/87</p>
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INCIDENT LIST – ATTACHMENT A

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<p>2001 April – 8 Location: Unit: Size:</p> <p>Incident Date: Leak/Incident Loc:</p> <p>Downtime hrs due to leak/total: ESP? Classification: How discovered:</p> <p>Leak detection: Sequence of events:</p> <p>Bed cooling:</p> <p>Wash adjacent tube: Repair procedure: Root cause: Future prevention: Last full inspection:</p>	<p>Inland Paperboard & Packaging, Orange, Texas No. 1 Recovery Boiler. B&W Contract PR-108. Start-up 1965. 1.65 million ppd solids. Operating @ 850 psig & 835F. Design @ 975 psig. 2 drum, small economizer, DCE. Superheater retrofitted to add interstage attemperator</p> <p>February 2, 2001</p> <p>Superheater- primary superheater tube in the 10th row broke 2 feet below the roof in a straight section and was not close to a superheater tie</p> <p>Total downtime – 65hours, 16 minutes</p> <p>No ESP</p> <p>Non-critical</p> <p>Nalco TRASAR system alarm indicating a small leak in economizer or superheater, which was verified by walkdown</p> <p>Nalco TRASAR system detected the leak</p> <p>The leak system alarm moved a walkdown that was unsuccessful after 4 hours in determining a leak source. About 11 hours after the 1st alarm, the leak got worse. Steam flow dropped 10,000 lb/hr and drum level rose. A further walkdown determined leak source. Liquor was pulled & gas burners placed in service. Available guns could not maintain drum pressure and boiler tripped on low drum level.</p> <p>Bed cooled with sodium bicarbonate by Southland. Time savings estimated at 72 hours.</p> <p>No</p> <p>Section of tube replaced</p> <p>Not determined. Tube sample sent for analysis</p> <p>December 2000</p>
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INCIDENT LIST – ATTACHMENT A

<p>2001 April – 9</p>	
<p>Location:</p>	<p>Weyerhaeuser Company, New Bern, North Carolina</p>
<p>Unit:</p>	<p>ABB-CE Contract 11667. Start-up 1969. Retrofitted by both B&W and CE.</p>
<p>Size:</p>	<p>3.6 million ppd solids. Operating @ 850 psig & 825F. Design @ 1000 psig. 2</p>
<p>Incident Date:</p>	<p>October 5, 2000</p>
<p>Leak/Incident Loc:</p>	<p>Superheater- 4th platen from right wall ruptured and 1st platen had a pinhole.</p>
<p>Downtime hrs due to leak/total:</p>	<p>2 leaks were. 1) thin wall rupture failure of ¼ in. by 3 in. in a loop and 2) pinhole leak at a pad weld on rear of the hockey stick</p>
<p>ESP?</p>	<p>Total downtime approx. 51 hours. 54 hours production curtailment</p>
<p>Classification:</p>	<p>None</p>
<p>How discovered:</p>	<p>Non-critical</p>
<p>Leak detection:</p>	<p>Operator observed sudden 30,000 lb/hr (6%) drop in steam flow, a ID fan speed increase of 35 RPM and a normally closed attemperator spray water valve opened that is normally closed.</p>
<p>Sequence of events:</p>	<p>Boiler had in operation a Mass and Chemical Balance system. Operator checked system after observing loss of steam flow. It showed no sign of a leak.</p>
<p>Bed cooling:</p>	<p>After above, operator turned off sootblowers and made a visual inspection. Loudest noise determined to be adjacent to the bottom of the superheater. Orderly shutdown initiated. Burners were pulled. 12 hours after fire taken out of furnace, water was put in superheater to locate leak.</p>
<p>Wash adjacent tube:</p>	<p>No. However, report says “Thin wall failure of superheater tube resulted in small rupture on one platen and pinhole at pad weld on another platen”</p>
<p>Repair procedure:</p>	<p>Answer not clear.</p>
<p>Root cause:</p>	<p>Both tubes sectioned and replaced.</p>
<p>Future prevention:</p>	<p>Erosion of tube from smelt runoff.</p>
<p>Last full inspection:</p>	<p>Affected platens to be replaced at next outage. Continue NDT monitoring during outages to discover areas of concern</p>
<p>May 2000. Chemical cleaned in 1988.</p>	

INCIDENT LIST – ATTACHMENT A

(1st is “List ...”, then filled in becomes “Summary ...”

<p>2001 April – 10 Location: Unit: Size: Incident Date: Leak/Incident Loc: Downtime hrs due to leak/total: ESP? Classification: How discovered: Leak detection: Sequence of events: Bed cooling: Wash adjacent tube: Repair procedure: Root cause: Future prevention: Last full inspection:</p>	<p>International Paper Company, Riegelwood, North Carolina No. 3 Recovery Boiler. CE Contract No. 3263. Start-up 1964. CE/ BE&K Revamp Contracts CS55086/CS717764 in 1987. 1.05 million ppd solids. Operating @ 850 psig & 825F. Design @ 950 psig. 2 drum/DCE January 13, 2001 Superheater – Complete circumferential failure of tube at penetration of high crown seal (about 6”-8” above roof). Tube is the outside tube of the platen (facing the sootblower cavity between superheater and boiler bank); it is one of three parallel flow tubes from the primary superheater inlet header of the platen. Crack is at the weld of tube to the high crown box. First crack of this type Not applicable ESP initiated Non-critical Operator went to close the manual feedwater valve because of a high steam drum level and heard a “pop” None installed When the “pop” noise was heard, the furnace pressurized. The Outside Operator called the Control Operator and ESP was initiated. No. The boiler had been off liquor and firing liquor for several days when the incident occurred. The only smelt in the furnace was in the decanting hearth. Limited cooling was needed No Sheared area replaced with a dutchman. Welds radiographed and unit hydroed It is probable that a crack started in the seal weld between the tube and crown seal. NDT inspection of similar welds would require that the crown seals be removed, therefore, mill concern for greater damage from conducting the NDT concluded with no inspaection Inspected March 2000. Acid cleaned in 1998</p>
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INCIDENT LIST – ATTACHMENT A

<p>2001 April – 11</p> <p>Location:</p> <p>Unit:</p> <p>Size:</p> <p>Incident Date:</p> <p>Leak/Incident Loc:</p> <p>Downtime hrs due to leak/total:</p> <p>ESP?</p> <p>Classification:</p> <p>How discovered:</p> <p>Leak detection:</p> <p>Sequence of events:</p> <p>Bed cooling:</p> <p>Wash adjacent tube:</p> <p>Repair procedure:</p> <p>Root cause:</p> <p>Future prevention:</p> <p>Last full inspection:</p>	<p>CRITICAL INCIDENT NO. 531</p> <p>International Paper Co., Courtland, Alabama</p> <p>No. 2 Recovery Boiler. B&W Contract No. 180. Start-up 1979.</p> <p>3.895 million ppd solids. Operating @ 450 psig & 550F. Design @ 550 psig. 2 drum/DCE</p> <p>January 13, 2001</p> <p>Boiler Bank – tube in 6th row from the furnace side of bank (gas inlet) worn through by vibration bar that had fallen to lay on the mud drum where it was wedged between 3rd and 4th tube from the north sidewall. Bank is a crossflow arrgt with no baffles. Bar wore through the 3rd tube and had thinned the 4th tube</p> <p>Total downtime – 39.25 hours</p> <p>ESP was performed</p> <p>Critical Incident</p> <p>Operator during routine walkdown noticed water in the boiler hopper</p> <p>Leak detection system operational. Design described as “Champion International Corp Mass Balance”. System did not indicate the leak</p> <p>At the time the operator noticed water in the hopper, there were no indications of a leak. ID fan speed had not increased, no measurable change in liquor solids concentration, drum level steady and no split between feedwater and steam. Leak thought to be in the economizer, but source could not be identified. Ash hopper monitored to verify water not entering the furnace. At 8 minutes from sighting water, auxiliary fuel put in boiler and started removing liquor guns. All guns out at 30 minutes & source indeterminate. At 80 minutes, Shift Mgr identified source & determined spray not entering the furnace. At 110 minutes, Dept Mgr instructed that ESP be initiated.</p> <p>None</p> <p>No. Second tube (4th from sidewall) thinned by vibration bar.</p> <p>Tubes plugged in the two drums.</p> <p>Mechanical abrasion of tube on bar</p> <p>Modify the method of attachment of the vibration bars</p> <p>October 2000</p>
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INCIDENT LIST – ATTACHMENT A

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<p>2001 April – 12 Location: Unit: Size: Incident Date: Leak/Incident Loc: Downtime hrs due to leak/total: ESP? Classification: How discovered: Leak detection: Sequence of events: Bed cooling: Wash adjacent tube: Repair procedure: Root cause: Future prevention: Last full inspection:</p>	<p>CRITICAL INCIDENT NO. 532 International Paper Company Vicksburg, Mississippi B&W Contact No. PR-105. Start-up 1967. Generating bank replaced 1991. 3.0 million ppd solids. Operating @ 1000 psig & 750F. Design @ 1200 psig. 2 drum / DCE January 23, 2001 Boiler Bank Screen – screen tube sheared completely at the upper end of nose arch. At this location, a swage transitions the 2-31/32 In. arch tube to a 2-1/2 in. screen tube. Failure was at circumferential field weld of the swage 2-1/2 in. end to the screen tube. Total downtime ESP to on-line – 97.35 hrs. ESP to on liquor – 106.5 hrs. ESP performed Critical Incident Feedwater flow was at top of the chart. (Drum level was above low level and furnace pressure below trip level). The Recovery Tender inspected the boiler and discovered water in the mud drum ash hopper. Boiler ESP initiated. None installed Liquor load had been reduced to permit entry into one of the precipitator chambers to repair plates. When the damper was closed, liquor diverted because of a low steam flow signal. The series of boiler conditions led the Recovery Tender to inspect. Outside contractor applied sodium bicarbonate propelled by Nitrogen over a 9 hour period of time. Estimated time savings 24 hours (see Note). No Bent tube section installed between swage and a point 12 feet from steam drum. Failure began externally at the toe of the field weld on the side of the weld toward the swage, ie, low side of weld in vertical tube. Crack propagated around tube circumference without becoming a through wall crack. The crack progressed until tube failed completely. Anti-vibration tube clamps will be installed on the front section of boiler bank tubes; clamps will extend to include the screen tubes. April 2000. Chemical cleaned in August 2000 with hydrochloric acid</p>
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Note: Attached to Incident Questionnaire is a Bed Coldown Questionnaire.

INCIDENT LIST – ATTACHMENT A

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<p>2001 April – 13 Location: Unit: Size: Incident Date: Leak/Incident Loc: Downtime hrs due to leak/total: ESP? Classification: How discovered: Leak detection: Sequence of events: Bed cooling: Wash adjacent tube: Repair procedure: Root cause: Future prevention: Last full inspection:</p>	<p>CRITICAL INCIDENT NO. 533 International Paper Company, Moss Point, Mississippi No. 3 Recovery Boiler. Alstom (CE-ABB) Contract No. 6965. Start-up 1965. ABB Alstom Power Revamp Contract 50586 in 1987 1.57 million ppd solids. Operating @ 860 psig & 825F. Design @ 985 psig. 2 drum / DCE December 28, 2000 Furnace Screen – 2 separate leaks on opposite sides of the same tube at the mid-point tie bar in the angled portion of the tube. Tube is the 6th tube from top of lower screen platen made up of 12 tangent tubes. Leaks at weld of 3/8” OD tie rod welded to both tubes; tie rods also welded to tubes in 5th and 7th row. Larger failure on upper side a series of pinholes at inside edge of weld. Second failure in lower weld a crack ¾ inch long in the weld. Downtime due to leak & ESP – 49.96 hrs / Total downtime – 88.65 hrs ESP Performed Critical Incident Following a trip for reasons unknown, operator making a pre-startup walkdown heard a rumbling noise (thought to be thunder as it was raining) and subsequently discovered water at liquor gun openings. None installed Water at ports continued to be observed after aspirating steam shutoff. ESP initiated No No Defects ground out, ground area dye penetrant checked & weld repaired. Welds radiographed. New tie bars installed near original position. Stress failure in 35 year old screen suspected as root cause of both leaks Additional tie bar welds radiographed to inspect for corrosion; no problems identified. At February 2001 outage, tube section replaced and more welds RT. February 20-26, 2000. Acid cleaned January 16, 1999, using Hydrochloric Acid soak</p>
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INCIDENT LIST – ATTACHMENT A

(1st is “List ...”, then filled in becomes “Summary ...”

<p>2001 April – 14 Location: Unit: Size: Incident Date: Leak/Incident Loc: Downtime hrs due to leak/total: ESP? Classification: How discovered: Leak detection: Sequence of events: Bed cooling: Wash adjacent tube: Repair procedure: Root cause: Future prevention: Last full inspection:</p>	<p>CRITICAL INCIDENT NO. 534 Packaging Corporation of America, Tomahawk, Wisconsin B&W Contract No. S-9712. Start-up 1952-52 562.000 ppd <u>soda</u> liquor solids. Operating @ 620 psig & 700F. Design @ 700 psig. 2 drum October 16, 2000 Furnace, Upper – Handhole leak in upper right furnace sidewall header. Total downtime – 36 hours ESP Initiated Critical Incident Operator at operating floor noticed water running down outer casing of furnace wall None installed On noticing water, operator went upstairs and found steam/condensate leaking out of penthouse enclosure. Liquor guns pulled. No water/steam evident in furnace. When leak from penthouse observed to be worsening, ESP initiated. No (bed with soda liquor less than 1 foot height) No Welded in a new handhole cap Gouge eroded by water leakage in seat of bolted handhole cap due to poor seat bolt-up April 2000</p>
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INCIDENT LIST – ATTACHMENT A

<p>2001 April – 15</p> <p>Location:</p> <p>Unit:</p> <p>Size:</p> <p>Incident Date:</p> <p>Leak/Incident Loc:</p> <p>Downtime hrs due to leak/total:</p> <p>ESP?</p> <p>Classification:</p> <p>How discovered:</p> <p>Leak detection:</p> <p>Sequence of events:</p> <p>Bed cooling:</p> <p>Wash adjacent tube:</p> <p>Repair procedure:</p> <p>Root cause:</p> <p>Future prevention:</p> <p>Last full inspection:</p>	<p>CRITICAL INCIDENT NO. 536</p> <p>Inland Paperboard & Packaging, Orange, Texas</p> <p>No. 1 Recovery Boiler. B&W Contract No. PR-108. Start-up 1965.</p> <p>1.65 million ppd solids. Operating @ 850 psig & 835F. Design @ 975 psig. 2 drum/small economizer/DCE</p> <p>May 1, 2000</p> <p>Furnace, Lower – 1/16 inch puncture in front wall tube forming the center primary airport, 36 inch above floor. (Tapered puncture ~ 0.4 in. round at outside wall & 1/16 in. at inside wall)</p> <p>Total Downtime – 86 hours, 42 minutes</p> <p>ESP Performed</p> <p>Critical Incident</p> <p>Operator rodding ports</p> <p>A Nalco TRASAR system was being installed but not commissioned.</p> <p>Several days of local blackouts at front (spout) wall resulted in several ports being plugged. Night shift Port Rodder had a new rod made of 1-1/8 inch key stock tapered to a sharp end to break hard smelt. When driving the rod with a hammer, he punctured a tube.</p> <p>Bed cooled by Southland Fire using sodium bicarbonate. Injection started 9.5 hours after ESP and after probing bed to check temperature. Water level was not checked. Estimated time savings – 72 hours</p> <p>No</p> <p>Section of tube approximately 5 ft. long replaced</p> <p>Operator error-sharpened rod being used to rod the ports</p> <p>December 1999</p>
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INCIDENT LIST – ATTACHMENT A

<p>2001 April – 16 Location: Unit: Size: Incident Date: Leak/Incident Loc: Downtime hrs due to leak/total: ESP? Classification: How discovered: Leak detection: Sequence of events: Bed cooling: Wash adjacent tube: Repair procedure: Root cause: Future prevention: Last full inspection:</p>	<p>CRITICAL INCIDENT NO. 537 Crown Vantage, St. Francisville, Louisiana B&W Contract PR-85. Start-up 1964. B&W Revamp Contract SC-1097 in 1988. 2.7 million ppd solids. Operating @ 560 psig & 750F. Design @ 600 psig. 2 drum/large economizer January 2, 2001 Furnace, Lower – two 1/8 inch pinholes developing at An undercut in a horizontal crack just below a pin stud located in sidewall tube #7, counted from front wall, at the primary airport elevation. Total Downtime – 74.5 hours ESP Performed. Critical Incident Boiler Tender was preparing to manually rod the primary air ports (where an automatic port rodder was not operating properly) when he noticed a blacked-out portion of the bed and believed he also observed water spraying in the same area. None installed Emergency siren turned on. Boiler Tender & Asst. Superintendent inserted a rod through the port and believed it was wet. ESP was initiated. Elapsed time from observing water in the furnace until initiating the ESP was 10 minutes Sodium bicarbonate injected into the smelt bed after probing to determine temperature. Injection started 9.3 hours after initiation of ESP. There was molten smelt in the bed. No Area of leak ground and weld overlaid Undercut of tube where a pin stud had been installed on a bare tube. Different contractor for future stud installation. Continue additional precautions of a dedicated QA/QC initiated for a May 2000 outage May 2000</p>
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INCIDENT LIST – ATTACHMENT A

(1st is “List ...”, then filled in becomes “Summary ...”

<p>2001 April – 17 Location: Unit: Size: Incident Date: Leak/Incident Loc: Downtime hrs due to leak/total: ESP? Classification: How discovered: Leak detection: Sequence of events: Bed cooling: Wash adjacent tube: Repair procedure: Root cause: Future prevention: Last full inspection:</p>	<p>CRITICAL INCIDENT NO. 538 Alliance Forest Products, Coosa Pines, Alabama Recovery Unit No. 2. CE Contract No. 13761. Start-up 1963. Revamp CE Contract 78692 in 1993. 750,000 ppd solids. Operating @ 550 psig & 730F. Design @ 650 psig. 3 drum boiler/DCE December 17, 2000 Furnace, Lower – a 6 inch vertical, thin lipped, fish mouth opening in a spout wall furnace tube at a point 76 inch above the furnace floor, ie, immediately above the primary air ports Total downtime – 251 hours ESP Performed Critical Incident Operator Walkdown None installed Begins with 2 drum level indicators showing low level & differential pressure control of feedwater control showed a drum level of + 14 in. on the DCS. Mechanic found dP instrument frozen; all feedwater to boiler had been shutoff. Water added manually until fiber optics column showed normal level. [1 of 4 drum level indicators was frozen and showed high to normal level. 3 indicated low drum level. 1-1/4 hr after discovering the level indicator problem, ID fan tripped on high furnace pressure. 27 minutes later, a starting burner placed in service. 3 minutes later, steam observed to be coming out of the liquor gun openings. Boiler was ESPd. Drum low level alarms responded properly after ESP initiated. No No Removed failed tube and adjacent tube (removed to verify cause) and installed 36 inch dutchmen. RT of welds. Boiler hydrotest produced a large number of leaks at rolled joints of boiler bank drums. Total generating bank re-rolled. Hydrotest revealed additional leaks which tubes were plugged and seal-welded. Another hydro was dry Low water incident. After water level reported to be reestablished, a starting burner in service (1 of 3) resulted in short-term overheat of furnace tube located so flame impingement by oil burner was possible. The top one-half of this boiler is outside the building. Incident occurred on the coldest day of the winter. <i>April 3 report-deposit greater than 95% iron oxide had density in a tube adjacent to the failure was 40 gm/ft² on the hot side and 75 gm/ft² on the cold side]</i> Electric heat traced water column sensing lines insulation was insufficient to prevent freezing with the severe wind coupled with cold temperature. Installed windbreaks & enclosures for drum ends and water column piping. April 2000. Chemically cleaned in 1993.</p>
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INCIDENT LIST – ATTACHMENT A

(1st is “List ...”, then filled in becomes “Summary ...”

<p>2001 April – 18 Location: Unit: Size: Incident Date: Leak/Incident Loc: Downtime hrs due to leak/total: ESP? Classification: How discovered: Leak detection: Sequence of events: Bed cooling: Wash adjacent tube: Repair procedure: Root cause: Future prevention: Last full inspection:</p>	<p>CRITICAL INCIDENT NO. 539 Crown Vantage, St. Francisville, Louisiana B&W Contract PR-85. Start-up 1964. B&W Revamp Contract SC-1097 in 1988. 2.7 million ppd solids. Operating @ 560 psig & 750F. Design @ 600 psig. 2 drum/large economizer January 16, 2001 Smelt Spout – crack in lower crotch area of water jacket at the furnace end of spout. Crack ~ 1/8 in. maximum width and running in both vertical and horizontal planes of the water jacket Total Downtime – 27.1 hours No Critical Incident. Leak at furnace end of spout; water could enter the furnace. Boiler Tender finished cleaning spouts when a large runoff from the east spout occurred & smelt began to periodically blow 10 – 15 feet across spout deck. None installed Steps taken to isolate cause of blowing smelt, such as, removal of spout wall liquor guns, shutoff spout hood wall wash showers, & shutoff cooling water to spout. The cooling water shutoff resulted in smelt discharge in a normal manner denoting a leak in the spout. Having determined a tube leak was not the cause, boiler was shutdown in a normal manner and bed burned out No No Both spouts replaced with same design. Spouts had been in operation about 8 months. Under investigation at the time of the report Dependent on determining root cause May 2000</p>
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INCIDENT LIST – ATTACHMENT A

<p>2001 April – 19</p>	<p>CRITICAL INCIDENT NO. 535</p>
<p>Location:</p>	<p>Weyerhaeuser Company, Kamloops Pulp, Kamloops, British Columbia</p>
<p>Unit:</p>	<p>No. 1 Recovery Boiler. CE Contract No. CA64103. Start-up 1965. Revamp-</p>
<p>Size:</p>	<p>No Information</p>
<p>Incident Date:</p>	<p>1.2 million ppd solids. Operating @640 psig & 730F. Design @ 735 psig. 2 drum/large economizer</p>
<p>Leak/Incident Loc:</p>	<p>January 24, 2001</p>
<p>Downtime hrs due to leak/total:</p>	<p>Furnace, Upper – random tubes and elevations externally severely corroded to extent one tube failed on the front wall 48'-3" above furnace floor (approx. nose elevation).</p>
<p>ESP?</p>	<p>Total Outage Time – 1401 hours</p>
<p>Classification:</p>	<p>ESP was performed</p>
<p>How discovered:</p>	<p>Critical Incident. Non-membrane unit; tangent tube construction permitted water to pass through the wall.</p>
<p>Leak detection:</p>	<p>Spoutman discovered water coming out of the smelt spout 85 minutes after liquor firing discontinued. No smelt was flowing out of the spouts of decanting hearth furnace.</p>
<p>Sequence of events:</p>	<p>System installed & operating is a Triple Five Acoustic System. System did not detect a leak that was 10 feet from a probe.</p>
<p>Bed cooling:</p>	<p>Boiler off liquor, sootblowing completed and firing 3 hearth burners when water flow from spout observed. Spoutman reported to control room; a suggestion that it was a repeat of a wall wash problem sent him to find Recovery Engineer. Investigation determined a wet streak on furnace side front wall adjacent to the spout. Decision to ESP; initiated 43 minutes after water observed at spout.</p>
<p>Wash adjacent tube:</p>	<p>No</p>
<p>Repair procedure:</p>	<p>No</p>
<p>Root cause:</p>	<p>Replaced front, right and left upper furnace walls. (A new furnace bottom was installed in 1996). Discovered localized corrosion of screen tubes in the rear wall seal box, as well as wall tubes at the same location, and decided to replace rear wall and screen sections below nose.</p>
<p>Future prevention:</p>	<p>Cold side (outside of furnace) corrosion. Waterwashing the furnace resulted in corrosion and failure of buckstay attachment welds, which resulted in tubes of tangent walls bowing into the furnace. As a consequence, more water and salt cake collected between wall and inner hot casing to accelerate the corrosion.</p>
<p>Last full inspection:</p>	<p>NDT annually. Some items on a 5 year cycle; last done in 1996</p>

INCIDENT LIST – ATTACHMENT A

<p>2001 April – 20 Location: Unit: Size: Incident Date: Leak/Incident Loc: Downtime hrs due to leak/total: ESP? Classification: How discovered: Leak detection: Sequence of events: Bed cooling: Wash adjacent tube: Repair procedure: Root cause: Future prevention: Last full inspection:</p>	<p>Fort James, Camas, Washington No. 4 Recovery Unit. CE Contract No. 22673. Start-up 1973. Revamp CE Contract CEPS 47581 2.5 million ppd solids. Operating @ 600 psig & 750F. Design @ 733 psig. 2 drum/large economizer September 28, 2000 Superheater – Hair line crack in attemperator water supply line at attachment of line to superheater steam header inside the penthouse enclosure Total downtime 56 hours ESP was performed Non-Critical. Casing sealed at roof line would prevent water from penthouse entering the furnace. By Fireman during walkdown. Observed water drip at 6th floor from above & found water dripping from thermocouple junction box on top floor. On his start of walkdown on the top floor, noise of sootblowers masked the noise of the leak. Honeywell Mass Balance System (conductivity based) is installed and was operational. Leak too small to measure. Decided must be a steam leak as only steam piping in the penthouse. Proceeded with a normal shutdown of pulling liquor, lighting gas burners & burning out some of bed. Gas firing terminated. Process Leaders arrived and pointed out that penthouse also had water circuits. ESP initiated . No No Crack ground out and rewelded Thermal stress believed to result from cycling water flow ----- Inspected May 2000. 7 years since last acid cleaning.</p>
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INCIDENT LIST – ATTACHMENT A (1st is “List ...”, then filled in becomes “Summary ...”
 (1st is “List ...”, then filled in becomes “Summary ...”

<p>2001 April – INTL 1</p> <p>Location:</p> <p>Unit:</p> <p>Size:</p> <p>Incident Date:</p> <p>Leak/Incident Loc:</p> <p>Downtime hrs due to leak/total:</p> <p>ESP?</p> <p>Classification:</p> <p>How discovered:</p> <p>Leak detection:</p> <p>Sequence of events:</p> <p>Bed cooling:</p> <p>Wash adjacent tube:</p> <p>Repair procedure:</p> <p>Root cause:</p> <p>Future prevention:</p> <p>Last full inspection:</p>	<p>Severoslovenske Celulozky a Papierne s.p. (SCP), Ruzomberok, SLOVAKIA</p> <p>B&W Contract No. 7426. Start-up 1987. Tampella lower furnace replacement in 1995. Ahlstrom revamp Contract 929011 in 1999.</p> <p>1600 metric ton/day solids (3.528 million ppd solids). Operating @ 580 psig & 752F. Design @ 609 psig. 2 drum</p> <p>September 22, 2000</p> <p>Furnace floor – Smelt leak at seal between sloped floor and spout wall. Opening 10 – 15 cm (0.4 – 0.6 inch)</p> <p>No</p> <p>-----</p> <p>Loud sound of smelt dropping to building floor</p> <p>None installed</p> <p>No</p> <p>Seal to be repaired as originally installed by B&W with refractory above the scalloped seal plates</p> <p>When bottom was replaced, the seal between floor and spout wall was designed without refractory</p> <p>See ‘Repair Procedure’</p>
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(1st is “List ...”, then filled in becomes “Summary ...”

QUESTIONNAIRE – ATTACHMENT B

Meeting Date	Item #
Subcommittee Use Only	Rev: 05/01

BLRBB

**Black Liquor Recovery Boiler Advisory Committee
Recovery Unit Incident Questionnaire**

Company Name: _____		Mill Location: _____	
Power & Recovery Manager: _____		Phone: _____	E-mail: _____
Prepared By: _____	Phone: _____	Fax: _____	
Preparer's E-mail: _____	Date Prepared: _____		
Local Site Unit ID: _____			
Original Boiler Contract No: _____	Manufacturer: _____	Start-up year: _____	
Revamp Contract No: _____	Revamp Supplier: _____	Effective Revamp Year: _____	
Capacity (Dry Solids MMLb/day): _____	Unit Type (large econ, direct contact evap, ACE, LAH, /#-drums) _____ / _____		
Steam Flow (at capacity) _____ lb/hr	MAWP: _____ psig	Operating P: _____ psi	Superheat Temp _____ °F
Date of Incident: _____	Time: _____	Hours out due to leak, ESP/total outage time: _____ / _____	
Incident Type (Explosion, leak, no leak) _____ Injury? _____ Damage? _____			
Component with leak	Furnace _____	Lower Furnace _____	Upper Furnace (above tertiary level) _____
	Screen _____	Superheater _____	Boiler Bank _____ Economizer _____
	Smelt Spout _____	Other (specify) _____	
Type of leak (size, kind of leak, method of failure): 1" circ. crack, 1/8" pinhole, rupture, etc. _____			
Exact location (include height above floor): _____			
How discovered? _____			
Was ESP performed?	Yes _____ No _____	If No, was area evacuated? _____	
What is current policy on how long to stay out of recovery area following ESP?		_____ hrs.	Irrevocable? (y/n) _____
In this case, did a first leak wash an adjacent area to thinning, leak, or rupture? _____			
What is the root cause of the first leak? _____			
Was leak detection system(s) installed? _____ Type(s): _____			
In operation? _____	Did it detect or confirm the leak? _____		Explain: _____
Was any bed cooling enhancement used? _____	How much time savings credited to cooling enhancement? _____		
Explain method, success, etc. _____			
When was unit's last thorough ndt inspection? _____	Does this unit have a total water level ? _____		Data included? _____
When was unit's last ID chemical cleaning ? _____	What chemical/process? _____		

Instructions. The purpose of the questionnaire is to provide prompt reliable information to aid in preventing explosions through improved awareness, practices and emergency shutdown procedures. This Questionnaire should be completed for **each** recovery boiler explosion, pressure parts failure or leak, ESP, potentially explosive incident, unscheduled shutdown, water entry into furnace or smelt tank explosion. Use black ink to fill out. If there is not enough space provided, please attach added information to complete the report. **Include 8-1/2x11 boiler side view diagram with leak location marked in RED or Dark color (NOT highlighter).** Copies are available at www.blrbac.org, address below, or copied as required. Please return the Questionnaire to:

Jack Clement, Secretary, ESP Subcommittee, c/o Clement Consulting Inc

563 Beaverbrook Drive, Akron, OH 44333-2818

**Tel: 330-865-9779; FAX 330-865-6960;
email: clementcon@cs.com**

NOTE: Please attend, or provide a representative, at the next BLRBAC meeting to report and discuss this incident.

Insert here an 8-1/2x11 boiler side view diagram with leak location marked in RED or Dark color (NOT highlighter)

Sequence of Events and ESP Procedure Used:

Thoroughly describe all events leading up to, during, and following the occurrence. Include sketches, observations, procedures used, times, flows, pressures, bed temperatures, floor tube temperatures, water level and pressure vs. time following ESP etc.

Description of failure, possible cause, remedies or fixes, etc. If weld defect, what kind? (lop, lof, undercut, porosity, etc.)

Method of repair

Learnings and procedures and plant equipment to prevent reoccurrence.

Additional comments (reports, charts, etc.) applicable to incident.

Overview of Operation at Time of Incident

Steam Flow at time of incident	_____	Lb/hr
Fuels being fired at the time	_____	
Size of char bed at the time	_____	
Describe conditions that contributed to leak (i.e. cause of leak - physical, corrosion, scale, faulty weld, water wash, etc.):	_____	

Any similar tube failures in previous years?	Yes _____	No _____
If so, number, locations, details, etc.	_____	

Extent of Incident:

Explosion?	Yes _____	No _____	
Number:	_____		
Relative violence:	_____		
Time lag between explosions:	_____		
Injuries?	Yes _____	No _____	
Severity of Injury:	_____		
Location of personnel when injured:	_____		
Damage?	Yes _____	No _____	
	<u>Slight</u>	<u>Moderate</u>	<u>Extensive</u>
Floor	_____	_____	_____
Walls in lower furnace	_____	_____	_____
Walls in center of furnace	_____	_____	_____
Walls in upper furnace	_____	_____	_____
Furnace roof	_____	_____	_____
Maximum furnace wall outward deflection (buckstay, casing):			_____ in.
Any floor beam deflection:	Yes _____	No _____	
If yes, where, how much, which end, details, etc.?	_____		

Operating Conditions at Time of Occurrence:

<u>Furnace:</u>	
bed:	Height of _____
running:	To what extent was smelt _____
Flow:	Steam _____ lbs/hr
meter(s):	Unit equipped with O ₂ and combustibles/CO Yes <input type="checkbox"/> No <input type="checkbox"/>
pe:	Ty _____
O ₂ and combustibles/CO preceding, during and following incident (attach charts if available):	

<u>Liquor:</u>	
service:	Number liquor guns: in _____ Idle: _____
	Sprayer plates used on all liquor guns at time of occurrence? Yes _____ No _____
	Firing rate: _____ Lbs DrySolids/Hr. _____
	Liquor, % solids _____ %, measured @ (loc.) _____
	Is liquor firing system in accordance with BLRBAC recommendations? Yes _____ No _____
	If not, please describe: _____

<u>Liquor Solids Determination Method:</u>	
Continuous recorder reading:	Yes _____ No _____
	Primary element-type density meter (Anacon, Blendmaster, Ohmart, etc.)
parallel:	Number of density meters, location, series or _____
at	Low solids alarm at _____ % solids
	Low solids stop firing _____ % solids
	Auto diversion valves: Yes _____ No _____
	Manual diversion: Yes _____ No _____
	Liquor fuel pump shutdown: Yes _____ No _____
	Any side streams added to liquor? Yes _____ No _____
	If yes, describe from where, amounts, how added, where added etc. (This includes spent acid, salt cake-H ₂ O slurry, other liquors, etc.):
Yes	Direct Contact Evaporator Dilution? _____
	Automati _____ Manual _____ Monitored _____

c

<u>Auxiliary Fuel:</u>			
Pilot:	gas _____	oil _____	light _____
	high energy elec. _____	carbon arc _____	
Pilot	Main fuel: gas _____	oil _____	
hearth	Number of burners:		
	in service:	secondary _____	other _____
	idle: hearth _____	secondary _____	other _____
	How long had hearth guns been fired before explosion: _____		hrs. _____
Is auxiliary burner monitoring in accordance with BLRBAC recommendations?			
Yes	Main burners monitored? _____	No _____	
Yes	Pilots only monitored? _____	No _____	
	If not, please describe: _____		

Complete if a smelt spout problem was involved:

<u>Smelt Spout:</u>			
Source of spout cooling water:	_____		
Rate of spout cooling water:	_____	GPM	
Water inlet temperature:	_____	°F	
Water outlet temperature:	_____	°F	
Water treatment used:			
Is low flow alarmed:	Yes _____	No _____	Where? _____
Is high temp. alarmed:	Yes _____	No _____	Where? _____
Valve on outlet side of spout:	Yes _____	No _____	
Previous history of spout leaks?	Yes _____	No _____	
If yes, explain:	_____		
How often are smelt spouts changed?	_____		

Miscellaneous Information

<u>Air lances used on this boiler?</u>	Yes _____	No _____
In use at time of incident?	Yes _____	No _____

<u>Inspection:</u>	
How often is unit inspected?	_____
Are tube thicknesses monitored by non-destructive testing?	_____
How often?	_____
Are internal deposits checked by tube sampling?	_____
How often?	_____

<u>Water Treatment:</u>	
Type of make-up water treatment:	_____
Type of condensate treatment:	_____

<u>Rapid Drain Tests:</u>	
Is ESP system periodically checked for operation?	Yes _____ No _____
Rapid drain valves checked locally?	Yes _____ No _____
How often?	_____
System energized, but boiler not drained?	Yes _____ No _____
How often?	_____

How is pressure being further rapidly reduced after draining to 8' level?

Post ESP Review and Inspection

Do you verify that all ESP function worked properly?	Yes _____	No _____
How?	_____	
Do you verify the water remaining in the lower furnace after an ESP?	Yes _____	No _____
How?	_____	
Do you review the floor tube thermocouples information?	Yes _____	No _____
Please include information with this report.		
Did you inspect the lower furnace after this ESP prior to returning the unit to service?	Yes _____	No _____
Findings?	_____	
Has any damage been noted following ESP rapid drain to 8' level which could be attributed to ESP?	Explain: _____	

Number of times unit has been drained:

IF FOR GENERAL UPDATE	<u>IF FOR THIS SPECIFIC INCIDENT</u>
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(i.e. <u>total</u> no. drains)			
As operational test:	To mud drum To 8' level	Date of occurrence: As operational test:	To mud drum To 8' level
Actual ESP:	To mud drum To 8' level	Actual ESP:	To mud drum To 8' level