

Date: 07/15/09

Subject: PZR Safety Questions and Attachments

Enclosed document will be reference in an upcoming Calvert Cliffs inspection report.

ML0919602223

Harry Balian

From: Furio, Patricia S [Patricia.Furio@constellation.com]
Sent: Thursday, March 12, 2009 8:48 AM
To: Harry Balian
Cc: Kennedy, Silas
Subject: FW: PZR Safety Questions
Attachments: Document.pdf; BV02950 Body Inlet.JPG; Inlet Nozzle.JPG

Harry,

Below are the responses to your questions from Kevin Dougherty. Please let me know if you have any additional questions.

Pat

From: Harry Balian [mailto:Harry.Balian@nrc.gov]
Sent: Wednesday, March 11, 2009 9:43 AM
To: Furio, Patricia S
Cc: Dougherty, Kevin; Silas Kennedy
Subject: PZR Safety Questions

Thanks for your help and patience. I know dealing with visiting inspectors can be inconvenient - particularly during an outage. Here are my remaining questions.

1. The extent of condition is still unclear to me. How did Calvert Cliffs determine that the currently installed safeties are not affected?

There was no "smoking gun" when the valve was disassembled after the high lift. With no definitive cause it is not possible to positively determine if the other valves are susceptible to the same unknown issue. A review of the recent history of the pressurizer safety valves shows no trend of high or low lifts that would indicate there is a programmatic issue at Calvert Cliffs. An additional positive data point is both pressurizer safeties that were removed from U2 during the 2009 RFO passed their as-found tests. BM07952 is the only out of spec as found lift attributable to equipment issues in the last 14 pressurizer safety as found tests, which covers the last 7 years. The absence of a smoking gun and history of good pressurizer safety as-found tests leads to the reasonable conclusion that there are no extent of condition issues.

2. Concerning inlet nozzle torque:

- a. what is inlet nozzle torque?

See the attached drawing and two pictures. The sealing flange for the inlet to the valve is a nozzle that gets screwed into the body/base of the valve. It is torqued to 600 ft lbs on installation. That torque is checked and re-torqued if necessary during every rebuild.

- b. how does inlet nozzle torque affect lift setpoint?

According to Dresser engineering it does not affect lift setpoint. See the text of an email from Dresser below.

- c. is there a concern with low inlet nozzle torque? One of the evals indicates this is common.

The main concern would be leakage around the c-seal that is between the valve body and the inlet nozzle (This seal would only see pressure if the valve was open). Review of our test records show that it is not uncommon to find the nozzle torque less than 600 ft lbs.

3. BM07952 was rebuilt three times before it could pass as-left testing following removal from service in 2006. What prevented identification of degraded internal moving components at that time?

Even after the valve was disassembled in 2008 there was no positive identification of a degraded component that could lead to a high lift. Discussions with industry experts (Dresser/Wyle/Other utilities) have revealed that out of spec lifts with no apparent cause can happen. The exact cause of the high lift will probably never be identified,

but replacing all of the internals and as-left testing prior to installation will eliminate the unknown cause. Having personally witnessed the rebuild of multiple valves with Dresser at Wyle I don't have any concern that during the rebuild in 2006 they missed something that should have been caught.

4. What is ASI? From the SSFF evaluation, I inferred it is a Combustion Engineering term describing axial flux profile. Am I correct?

ASI is the Axial Shape Index:

$$\text{ASI} = [(\text{power in the bottom half of the core}) - (\text{power in the top half of the core})] / [\text{total core power}]$$

FROM: HUFFMAN, ROLLAND S [MAILTO:ROLLAND.HUFFMAN@DRESSER.COM]
SENT: WEDNESDAY, JANUARY 07, 2009 9:29 AM
TO: DOUGHERTY, KEVIN; HUDSON, ANDY
CC: KLEIN, JASON; SMART, LARRY W
SUBJECT: RE: NOZZLE TORQUE ON PRESSURIZER SAFETY VALVES

KEVIN,
AS WITH ANY FASTENER, THREAD-TORQUE DEGRADES WITH HEATING AND COOLING CYCLES. IT IS NOT UNUSUAL TO FIND NOZZLES LOOSE. THE BODY-NOZZLE THREAD CONNECTION HOLDS THE NOZZLE IN PLACE UNTIL THE VALVE IS INSTALLED. WHEN THE VALVE IS INSTALLED, THE FLANGE OF THE NOZZLE IS SANDWICHED BETWEEN THE MATING FLANGES. A LOOSE NOZZLE DOES NOT AFFECT SET PRESSURE. HOWEVER, IT COULD AFFECT THE TIGHTNESS OF THE C-SEAL JOINT BETWEEN THE FACE OF THE BODY FLANGE AND THE BACKSIDE OF THE NOZZLE FLANGE. THIS MEANS THE JOINT COULD LEAK ON BACKPRESSURE TESTING. IN GENERAL DURING REFURBISHMENT IF THE NOZZLE IS FOUND LOOSE, DRESSER RECOMMENDS THAT THE NOZZLE BE RE-TORQUED. CAUTION! DO NOT USE THE TORQUE VALUES GIVEN ON PAGE 42 OF THE 31700 INSTALLATION AND MAINTENANCE MANUAL (DATED 10-28-78, REVISION 4, AND EARLIER). FOR THE 31739 PSV THE REVISED RECOMMENDED TORQUE IS 550-600 FT-LBS. THE HIGHER VALUES IN THE MANUAL MAY DISTORT THE FLANGE OF THE NOZZLE LEADING TO JOINT LEAKAGE. THERE IS NO RECOMMENDED PRACTICE FOR PREVENTING DEGRADATION OF THE NOZZLE TORQUE.
ROLLAND .

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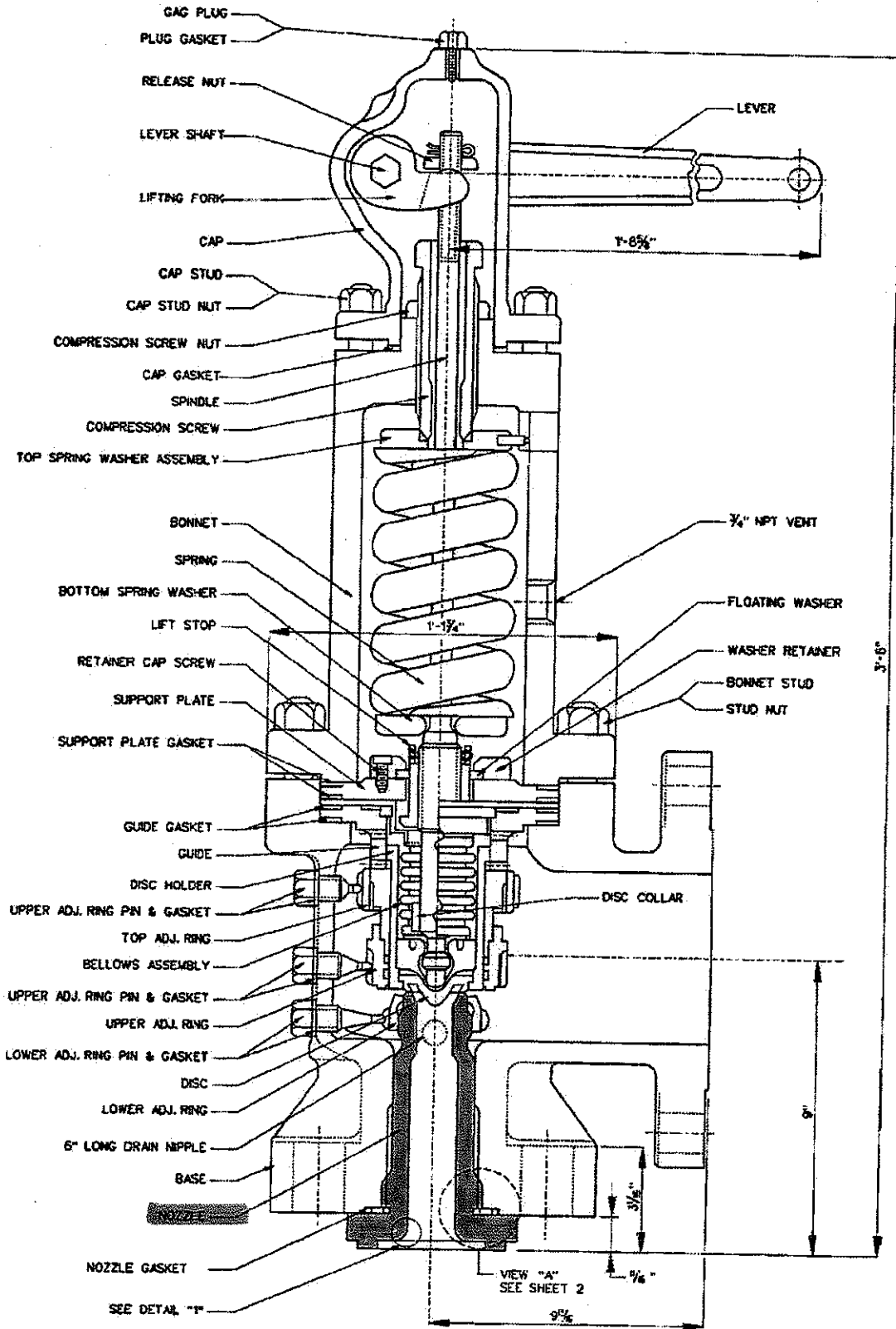
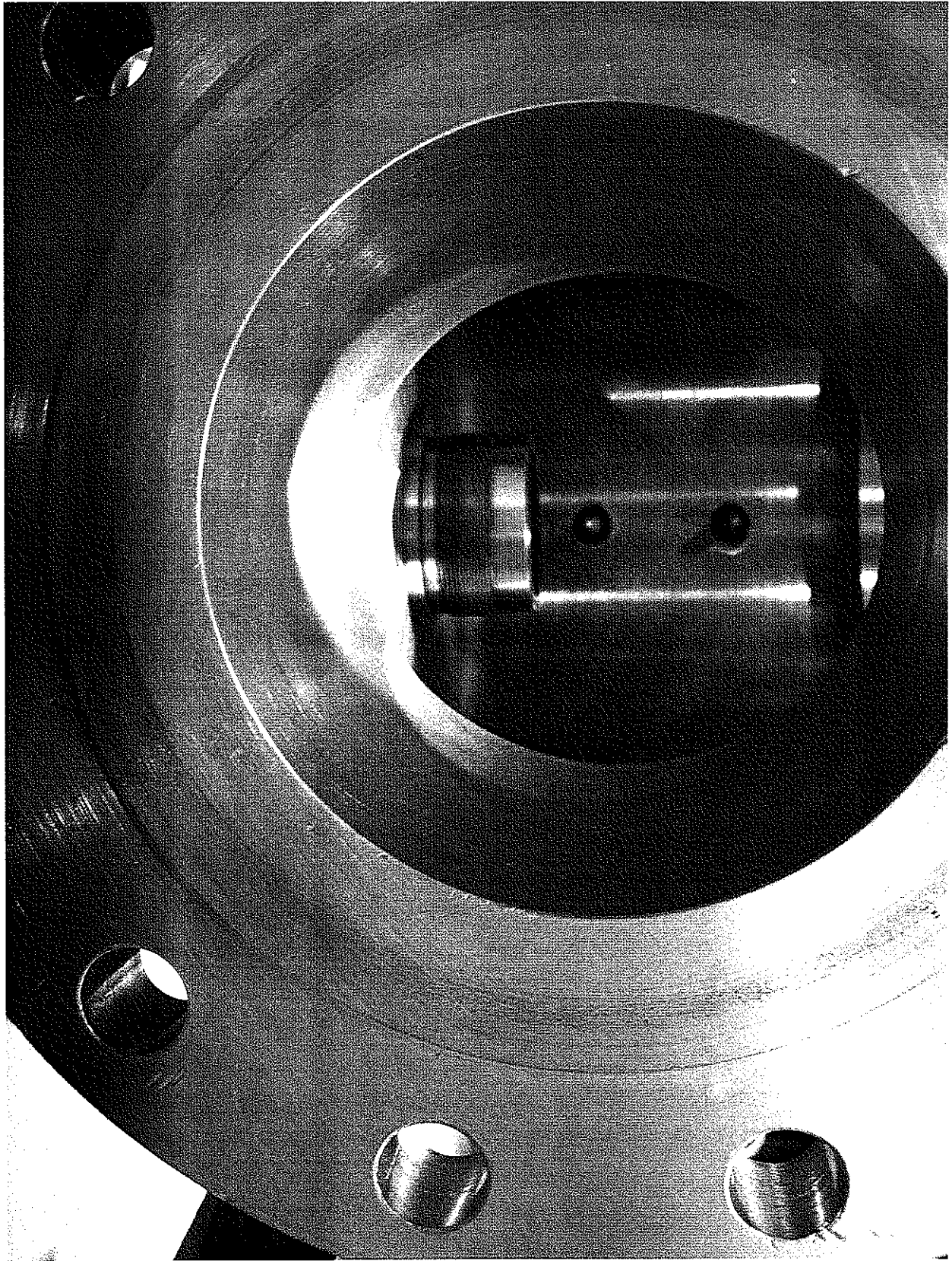
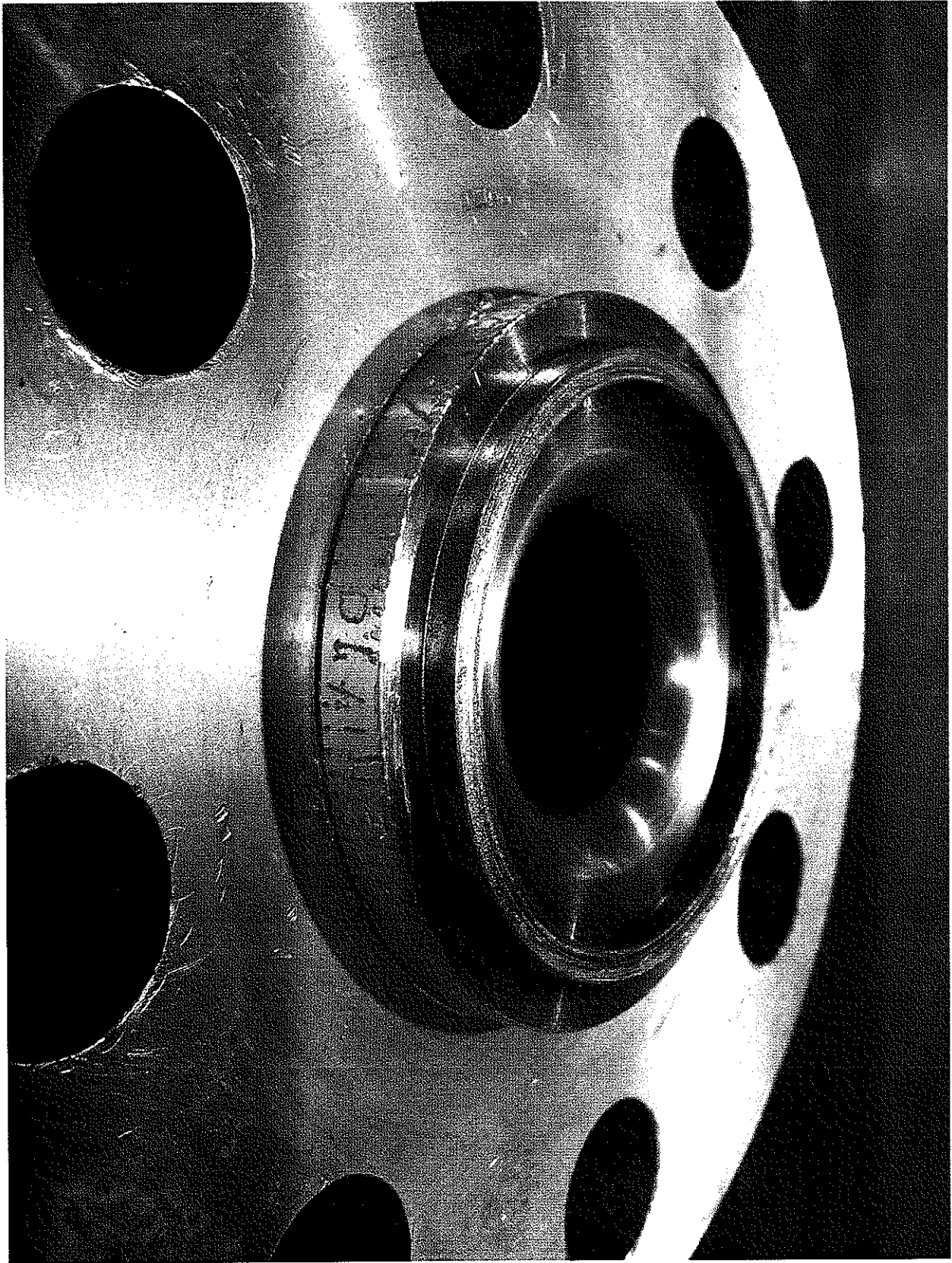


Figure 1





Kennedy, Silas

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