

DUQUESNE LIGHT COMPANY
Beaver Valley Power Station

Ray L. Lacey
8.
June 9, 1981
BVPS:WSL:18

June 2, 1981 Auto-Stop Of The 1A Main Feedwater Pump

Mr. J. A. Werling:

Please find attached a report on the June 2, 1981 Feedwater Pump [FW-P-1A] trip. This report was compiled by Frank Witkowski of the Technical Advisory Group and Jim Daugherty, Nuclear Shift Operating Foreman.

In addition to the information contained in the report, I would like to offer the following:

After the restart of [FW-P-1A], an alarm was received that indicated "Abnormal Steam Generator Feed PPLA Lube Oil Pump Trouble". In the subsequent check-out of the main feed pump, three valves on the pressure switch manifold were found to be in what was felt, at the time, the closed position. Since the alarm came in after the pump was restarted, it is more likely that the switch isolation valves were throttled practically closed to reduce hydraulic surges. The pressure would have bled down during the short period of time the feed pump was shutdown.

W. S. Lacey
W. S. Lacey

Attachment

WSL:sas

cc: J. J. Carey
J. D. Sieber
T. D. Jones
H. P. Williams
Onsite Safety Committee members
F. P. Witkowski
J. A. Daugherty
Central File (2)

June 8, 1981

Report On The Auto-stop Of the 1A Main Feedwater Pump

The 1A Main Feedwater Pump tripped at 1427 hours on June 2, 1981. The Sequence of Events recorder indicated the 1A1 motor stopped approximately 34 milli-seconds before the 1A2 motor, implying that the 1A1 motor tripped on electrical protection. The NCO manually re-started the 1A1 motor after the discharge valve closed. Then, the 1A2 motor automatically started in 1.5 seconds. Within minutes, the NSOF went to the motor breaker switchgear cabinets and found the 1B1 breaker cabinet for the 1A2 motor phase A timed overcurrent relay (51-VB101A) had tripped. DLCo construction personnel were also working in the breaker compartment. Work consisted of pulling cable and making/preparing terminal ends for DCP 299.

The NSOF reset relay (51-VB101A) and informed construction personnel of the incident. He did not remember which flag had dropped.

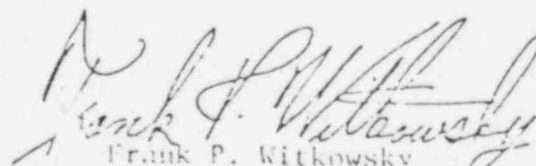
There had been some confusion as to which motor had tripped first - the 1A1 or the 1A2. The Sequence of Events recorder indicated that 1A1 auto-stopped by indicated time sequence but the timed overcurrent COM-5 relay (51-VB101A) on the 1A2 motor A phase had been found tripped. A check of the logics indicates no motor preference in tripping sequence. This implies that either motor, tripped on electrical protection, will auto-stop the other motor. The Computer Engineer has made a preliminary check of the 1A1 and 1A2 motor alarm addresses and has found nothing outstanding. The Computer Engineer will input false input signals at each motor (at the earliest opportunity that the breaker cubicles can be worked in) to verify that the computer leads are not reversed.

Since the feedwater pump motors did not trip out on their manual re-start, it is reasonable to assume that no electrical abnormal motor conditions exist. Both motors started and have been running for days at full power demand since the incident.

It should be noted that the COM-5 type relay can, while monitoring motor running current, be tripped by a sudden jar.

Contrary to the Sequence of Events recorder print-out on which motor tripped first, no indicated trip was found for the 1A1 motor. The 1A1 motor's breaker cabinet (1A) was found closed and no one was working at or near it. However, the solid state ground relay 50-VA101 has been found in the targeted position at least twice since the auto-stop incident. These ground relays are often found targeted and may be considered unreliable indication.

In summary, although not conclusive - but very probably, the 1A Main Feed Pump had been unintentionally and accidentally tripped by construction personnel who were working in the 1A2 motor breaker cabinet while they were pulling cable or working inside and very close to the targeted relay 51-VB101A.


Frank P. Witkowski
Shift Technical Advisor

1⁰⁰ PM

6-13-81

Victor Fiore, 1 BEW
Pres local union
Present

Richard P. Mueller, N.C.O.
Duquesne L

only worked on 6/5

Don Crouch Supv
CP on 6/4 and 6/6
overtime on 6/5 3 & 11

Normal Supv Jim Turner/A

Reactor Operator on 6/5 worked
only in C.R.

Communicate w/Aux Operator

Pick up keys if needed on
trips to FA B

~~Don't tell~~ SS told crew what
happened w/ 3 missing chains
& hooks found on Day
Shift. Make sure others
weren't missing.

Previous incidents on valves
No recall other than chains
missing
Keys in C R May be on
Dist Operator being
Log for WSS Keys. O

Filled accumulator "C"
4:30 PM on 6/5/81 Filled at normal
rate. Fills every day
Feels valve was open
during filling.
Pump Positive Displacement
Reader in C R
Been some packing tightened
on valves.

Stop Start switch
Speed increaser
Pressure & level on each
accumulator.

Filled at normal rate
In last 10 days had been
involved w/ filling

Prior to 6/4 worked
3 to 11 for 4 1/3 days ending
Been adding 70 & 80 gal.
Levels are 9 percent.
C Thinks 56% to 76%

Fill to 74% or 72%

Goes down to about 64%
Info is logged, drop 10 or 11%

Had been doing this on
each shift for previous 10 days,

Fill from RWST
Add to RWST when down ~1000 gal.

~ 7 gal/percent

S.I. 41 locked valve in PAB
Aux operator checks suction
valve on pump & relief valve.

Filling tapes ~ 10 to 15 mins.
Pressure Indicator at pump

Pump on 735' level

S/ 26 Downstairs thru
penetration area

S/ H/ at start of penetration
contaminated area (was before
anyway)

S/ 26 Clean Area

Packing leaks are in containment

Skiba ~~th~~ in PAB on 6/5/81
Skiba reported to Fire valve 26 open

NO to 12, 13, 14, 20
22, 23, 24,

Vic Fiore

Rick Mueller RO

10-15 minutes

4:30 PM fill Accumulator

filling accumulator every day

70-80 gal "C"

valve had to be open

use level indicator

packing on valve - tighten valves
inside cont

2 level & 2 pr on each Accum.
did fill accumulator - appeared ~~at~~
to fill at normal rate

~~no Tech Spec~~

56-70 90 level band

fill to 74 90 7 gal / 90

drops 10-11 90 in one day

Put in log
did it on 5th

didn't do it on 9th

did it 10 days straight

always within Tech Spec limit
no recorders

problems with pump lifting early
relief valve

1 1/2 wks
pump discharge valve chained & locked

SI-26 suction Do not have to suit
-41 discharge locked closed suits up
aux-operator did see 26 valve open
for C Accumulator fill

on shift till 11:00

Fiore Present 6/13/81 1 5⁰⁰ PM 2⁴⁰ PM

Keith M. Allen, Nuclear Operator

6/4^{Thurs Fri Sat} - 5 - 4 3 to 11 shift

(Class 6) Off on 6/6

Been operator 2 1/2 yrs.
Thurs Aux Bldg Operator,
In & out several times during
shift longest entry 2 hrs.

for Tour to complete logs
Tour once each shift (first 2
Mayer Terry log is diesels
are twice each shift)

Pick up Aux Key Ring^{3 hrs}
beginning 7 shift by signing
for keys. One Key Ring
PO has own Keys.

On Thursday 51-26 recalls
specifically that 51-26 was
open. Feels chain was
around valve bonnet instead
of pipe. Views were pipe
obscured block.

On 6/5 was extra
man - Containment Vac Pump
OST Go in Aux Bldg

Safeguard 727 level
6/2 - Aux feed pump room
6/5 to look at suction valves
that had been found w/
chains & locks missing.
(Went to look at on ground)

6/4 These 3 checked Thurs
nite - Feels sure were locked
w/in first 3 hrs of shift
on Thurs.

Were equipped w/ chains & locks
3 - Control Room most of night

X Saw Aux Operator on tour
during Mike Skiba.
Skiba helped find 2 valves
for OST.

③ 735 ground level

On Fri afternoon at 3⁰⁰ PM
found out about 3 chains
it looks missing. Asked about
Thurs tour & members were
locked.

On Thurs nite opened
5# 41 to fill accumulator.
Check log

Don't remember of other people
in PAB or not on Thurs. Probably
was but unremembered or not outstanding 35' level

Contractors in Aux Feed Pump
Room on Fri night - 6 or 8 people.
Saw them looking for valves,
Clean area. They had hose
thru Fire door.

1" line going to accumulator pump
NO to 12, 13, 14, 20, 22,
23 & 24

Keith Allen ^{young} 3 to 11 shift 4th & 5th
Thur Aux building operator

doesn't remember about fill of 'C' Accum
for Thur. check log

Thur checking 26 not a prerequisite to fill Accum
Fri extra man Fri no assigned duty
Aux Feedpump Room was in to check

checked Thur night to see that
Aux Feedpump suction valve were
chained & locked - They were chained
& locked - did this during first or
2nd hour & 26 valve

was in control Run most of Fri.
cont vacuum pro - OST - needed Skiba to find
valves

10 min to fill "C" Accum
doesn't call when finished, listen to
flow

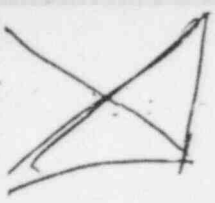
Fri there were contractors in Aux Feedpump
Room 6-8 contractors ^{possible} working on ^{exits} pipe
clean area

~~not a~~ clean area in discharge valve 41
close to 26 valve pump room & down
ladder
one key for all safety locks

1 inch line to accumulator

2112 years ^{N.O.} entry - 05T
6 wks school test Feb 80

4 to 6 months before qualified
4 years as NO to be Control Room
no tech training before



6-13-81

70
3 PM

BV started ~ 76 in Jan. 74
came in Jan. 2, 3
Gregory H. Davis
Nuclear Shift Operating Foreman
S.R. license
June 4, 5, 6, 878

Aux Operator 3 yrs
Reactor Operator ~ 3 yrs
Worked 3 & 11 on 6/6/81
Been 8 yrs
Present Position 2 yrs

Took turn over from
shift foreman & spent shift
in C.R.

Received word that 4
valves tampered with
chains ~~missing~~ "cut" on 3
valves & chain laying below
valve. (Joe Macky gave turnover)

Other was S/T 26 closed
& chain missing.

Two man rule in effect
when came.

~~Forgot~~ Personally toured
Aux Bldg. w/ Frank Witkowski
looking at valving (Safety
Related)

Record in SS log - Didn't
write down that day what

was looked at but did
after that day.

Aware of "C" accumulator
problem. Recently had look
in 5 pumps that was
fixed yesterday.

Hydro test pump relief
valve been a problem.

Tour log thinks
5126, Valve position —
check that secure —

5141
similar (maybe)

23 Not safety related

NO to 12, 13, 14, 20,
22 & 24.

Greg

Davie

Foreman Shift
SRO
Management

heard they were chains
laying below cut - pieces

problem with relief valve
hard time filling Accum
started 2 present position
Jan 74 3 N. operators
3 aux op
2 1/2 years eng

training only in last year
5 months to be Aux Operator

6/13/81 4⁵⁰ PM Eiori present

1 yr Pitt James M. Stauber,
1 yr Community College Va. Nuclear Control Operator
Worked here since Summer ^{Aug} '76 Dec '75
licensed Off 6-4 school at Shippington
~ Nov '79 6-5 - 7 to 3 PM
6-6 - 3 to 11 PM

6-5 - extra operator on overtime
Mostly in Control Room

Not operating
in PAB twice (in afternoon)

Picked up clearance on DBR
P1A. Did Maint &
Took tag on breaker.

Evaporator Bottom Pumps
Dug Maint. ~ 2 PM

Both times was for tag
Total time 3 min.

Didn't observe others - ~ 50
ft inside door on same level.

6-6 Reactor Control Room
Operator

In C.R. all shift
Filled "C" accumulator
Filling was normal
Operator opens valve

(2)

Filled accumulator & called operator
There is Procedure.

On 6-5 ~~saw~~ ~~person~~ Morgan
~~came in~~ took new Chains to
Morgan at locker room.
Heard chains were missing

On 6/6 was told at turnover
about 51-26.

Plant Operator Keys in CR
if needed.

(23) — Probably in temporary
system ie liquid waste.
No safety related valve
problems.

NO to 12, 13, 14, 20,
22, & 24.

Jim Stambor 5th 7 to 3 day Fri
RO 6th 3 to 11 Sat

5th clearances - on OT

in Aux Building that day (two entries)
continuous prob with pump
evapor bottom pump
after 1 PM for minutes

6th RO on that day (all day)

filled "C" Accumulator

started summer 76 Aux 3 times to pass test

Any 1 yr shipping pit 8 months fossit

1 yr Pit + 1 yr Comm College

call operator to shut valve

procedures

he gave
Morgan doesn't know what time
missing chains were received

how long Aux operator
simulator

how often did fill C Accum 10 times

how long back 1 yr

sumps = liquid radwaste

8 month Aux op ~~then~~ for 1 1/2

6/13/81 4⁴⁵ PM Fiore Present

Roy E. Price, ①
Nuclear Operator
Worked since Aug. 25, 80

6/4 - 5 - 6 worked
11 to 7 all 3 days

6/4 -

Had Aux Bldg tour
I was Aux Bldg Operator
Probably started ~ 1⁰⁰ AM
on tour I til about 2³⁰ PM
(Has South Yard readings for
Diesel Generators)

Doesn't think SI 26 had chain
around pipe - don't remember how
others were,

Don't recall seeing people
in Aux Bldg that can remember.
Probably back in PAB but
don't remember,

Can remember SI 26 w/ f
I chain on by not making any
notes.

Hasn't seen valves closed.
Not sure of chain or other

(2)

6/5
~~11:00 AM to 3:00 AM~~ located in PAB
~~5:00 AM~~ had MS105
valve watch. Had to see if
valves ^{was} closed - is supposed to
be open - Valve is in Main
Steam Valve Room.

Saw ~~no one~~ sitting in MCC Room - 3
rooms adjacent - Was there 4 hrs.

Valve is MOV - Someone
there all the time. Left ~
3 AM.

Went in ~ 5 AM with
Druga - SS - Looking for
2 check valves that weren't
on blue prints. Around BP 36
Didn't hear ~ 3 valve
problem. Thought all happened
at same time as heard all
at same time.

Didn't find valves but
may be in trench.

Didn't see anyone w/ Druga

One more quick entry to
pick up a paper of notes i.e. w/ Druga.

(3)

6/6/81

Worked on Water treatment
not in Aux Bldg. all night.

Early morning ~ 6⁰⁰ AM
Heard about Martha finding
51-26 w/ chain missing. I
closed. Also heard about
chains missing on other valves.
Think 51-26 some kind of safety valve.

6/8/81

Wanted to Pump down
tunnel sump pump to
look for chains but
perhaps wouldn't work.
This is when chains were
being hunted. Pump down since started.

Is a part of Class 8.

Opens 51-41 on accumulator
They call or pipe stops
banging. Usually Close Valve
then.

(4)

Does OST work also.

~ 7 NO's on shift
3 Class 8
4 " 6

NO's 12, 13, 14, 20,
22, 23, & 24,

Roy Price 101 years old no school nice guy
Nuclear Operator
Martha Class 8 started
4, 5, 6 11p to 7a Aug 25, 1980

4th Thur Ayr Building Operator
about 1 AM started Ayr Building
takes 1 - 1 1/2 hrs - Did verify that
SL 26 & Ayr Feed valves were chained
& locked visually looked at valves
did not do "C" Accumulator that
does it a lot fill "C" Accumulator
5th Fri MS 105 steam shutoff was
11p to 3a MS 105 watch
left
did not find check valves for
Boron recovery

safety valve thinks it a suction valve
does know a lot about it

heard about it 6:00 del. *

tunnel sump pumps broke from
first starting

Class 8 followed (2 years)
Class 6 (back school)
2-3 wks then on own

Did OST's by self just with 4 months
w/ a camp
~ 7 Nuclear 4 class 8
3 class 6

6/15/81

30
3 PM

Kevin T. Martin, Nuclear
Operator

Accompanied by Robert Hospoda
NCO
IBEW Union Representative

June 6 - on 11 to 7 shift
11 to 1 AM

Main Steam Valve Watch
in PAB

June 5 - 11 to 7 shift
Water Treatment
not in PAB

Valve Watch June 4 - 11 to 7 shift
Don't recall work
sometime June 3 - 11 to 7 shift

PAB Operator
Explained tour

Tour check Diesels to start

Tour inside 12:15 PM on so.

Shift 2

Read about chains &
SI 26 at same time,

Filling accumulator
5/40

Not on tour to lock &
chain.

NO to 12, 13, 14, 20,
22, 23, & 24.

6-16-81

4:45 PM

Christopher P Hynes, Power
Stations Engr.

Supv. Brugga
since May 18, 1981
one week training and
at site ~ May 25, 1981

In 4 yr program for
No 5.5.

BS Civil Eng U of P
1981

2 3 4 5, 6

June 4, 1981

~~200~~ 11:00 PM to 7:00 AM

Wed night 11:00 PM
TLD obtained

Two or 3 entries w/
Bob Thompson - Same class first
been here 2 or 3 months.

No work done - just
orientation as to location
in general of levels.

June 5, 1981

One entry w/ Draga NSS

Entry for location check off.

Main Steam System check

Thinks I went down
both doors & up ladders.
Finished check off
MSS.

June 6, 1981

Entered after 1:00 am and
2 man rule in effect

Entered w/ Tom Humber, NO.

Heard about 5126
on ship when found. Didn't
know location.

Does not recognize 5126
or other valves from photos,
Has seen since.

Heard about other 3
values after June 6,
that had chains missing.

Card No. 1436
Badge No. 2099

No to 12, 13, 14, 20,
22, 23, & 24

6/11/81 10:45 AM

3 entries to Au

Fri before - 12 min.

10:00 schedule WBC

Didn't have [unclear]

11:27 6 at PAB w/

to 11:34 badge & card - Signed
RWP & went in.

~~6/11/81~~

~~6/11/81~~

3 valve chains missing ~ 9:00 am
Fri

single valve check 4:30 pm
and gone at 1:00 AM Sat.

Individual 8:30 AM interviewed
& 9:30 AM - then, to Dublin

Bureau interviewing now.

NRC not there at interview.

De Young called President
last night & said NRC would interview.

2 - Notices to Ward, Brown,
Thornburg & ~~Feister~~ Snizek

Ward calling 177 desk
re to Mitzko

Candidate:

EE Graduate of U of Pitts
Buddy worked for Rad Services Inc
Got job as Rad. Tech.

Been warned before - on
argumentative, hot head - told
he was being fired Thu. morning.

Safeguards measures were
bypassed - put to bed -

Card key could go back
Aux. operators & SS have
hard key.

Telecon w/ Snizek, Brown,
Jordan.

Ward - Designed basis of
insider 