



April 2, 2014

ULNRC-06109

U.S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555-0001

10 CFR 50.55a

Ladies and Gentlemen:

**DOCKET NUMBER 50-483  
CALLAWAY PLANT UNIT 1  
UNION ELECTRIC CO.  
FACILITY OPERATING LICENSE NPF-30  
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION RE: PR-03  
AND PR-05, PROPOSED ALTERNATIVES FROM ASME OM CODE PUMP  
AND VALVE TESTING REQUIREMENTS, AND WITHDRAWAL OF  
RELIEF REQUEST PR-05. (TAC NOS. MF2786 AND MF2788)**

- References:
- 1) ULNRC-06034 dated September 23, 2013 (ADAMS Accession No. ML13267A183)
  - 2) NRC Letter, "Request for Additional Information Re: PR-03 and PR-05, Proposed Alternatives from ASME OM Code Pump and Valve Testing Requirements (TAC Nos. MF2786 and MF2788)," dated March 5, 2014 (ADAMS Accession No. ML14059A345)

Pursuant to 10 CFR 50.55a(a)(3), and by letter dated September 23, 2013, (Reference 1), Union Electric Company (Ameren Missouri) requested NRC approval of relief requests PR-01, PR-02, PR-03, PR-04, PR-05 and PR-06 for the fourth 10-year inservice testing interval at Callaway. By letter dated March 5, 2014 (Reference 2), the NRC staff transmitted a request for additional information (RAI) needed to complete its formal review of relief requests PR-03 and PR-05. PR-03 is a request to permit use of a test flow path for the boric acid transfer pumps, for which only differential pressure (in lieu of differential pressure and flow) will be measured but which would still provide an adequate means to assess pump performance. PR-05 is a request to increase the upper limit of the required action range for comprehensive pump test flow results from +3 percent to +6 percent, following the guidance of ASME OM Code Case OMN-19.

Ameren Missouri's response to the RAI is provided in the attachment to this letter.

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It should be noted that, upon further consideration of relief request PR-05, Ameren Missouri has determined that it should be withdrawn. Therefore, by this letter, Ameren Missouri respectfully requests withdrawal of the relief request identified as PR-05. This request does not affect the other (5) relief requests (PR-01, PR-02, PR-03, PR-04 and PR-06) submitted via the September 23, 2013 letter.

This letter and its attachment do not contain new commitments. None of the material presented herein is considered proprietary by Ameren Missouri.

Please contact me at 573-676-8719 or Jim Kovar at 314-225-1478 for any questions you may have regarding this response.

Sincerely,

Handwritten signature of S. A. Maglio in black ink, consisting of the initials 'S. A. M' followed by a large, stylized flourish.

S. A. Maglio  
Regulatory Affairs Manager

JPK/

Attachment: Response to Request For Additional Information (RAI) Regarding Relief Requests PR-03 and PR-05, Proposed Alternatives from ASME OM Code Pump and Valve Testing Requirements

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cc: Mr. Marc L. Dapas  
Regional Administrator  
U. S. Nuclear Regulatory Commission  
Region IV  
1600 East Lamar Boulevard  
Arlington, TX 76011-4511

Senior Resident Inspector  
Callaway Resident Office  
U.S. Nuclear Regulatory Commission  
8201 NRC Road  
Steedman, MO 65077

Mr. Fred Lyon  
Project Manager, Callaway Plant  
Office of Nuclear Reactor Regulation  
U. S. Nuclear Regulatory Commission  
Mail Stop O-8B1  
Washington, DC 20555-2738

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**Index and send hardcopy to QA File A160.0761**

**Hardcopy:**

Certrec Corporation

4150 International Plaza Suite 820

Fort Worth, TX 76109

(Certrec receives ALL attachments as long as they are non-safeguards and may be publicly disclosed.)

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Mr. John O'Neill (Pillsbury Winthrop Shaw Pittman LLP)

Missouri Public Service Commission

**Response to Request For Additional Information (RAI) Regarding Relief Requests PR-03 and PR-05, Proposed Alternatives from ASME OM Code Pump and Valve Testing Requirements**

**RAI PR-03-1**

The Request states that flow measuring instrumentation is not installed in the mini-flow recirculation flow path. Explain why flow measuring instrumentation cannot be installed in this flow path.

**PR-03-1 Response:**

*This flowpath does not include permanently installed flow instrumentation and would require a costly system modification for such capability. The most suitable location for use of a temporary ultrasonic flow meter (UFM) has numerous small bore instrument lines interfering with the use of a ladder to reach the applicable Boric Acid Transfer piping. Callaway would also have to implement new and more costly calibration requirements on our UFM equipment.*

**RAI PR-03-2**

Provide a pump curve for the Boric Acid Transfer Pumps. If the pumps are operating at 15 gpm, are they operating on a flat portion of the curve or a sloped portion of the curve? If they are operating on a flat portion of the curve, discuss how pump degradation can be detected from the proposed Group A test results if flow is not measured.

**PR-03-2 Response:**

*Pump curves have been attached with this response. At 15 GPM the pump curves do exhibit some degree of slope/linearity, although not nearly as linear as the 75GPM bi-ennial CPT flow. The lack of flow measurement during quarterly testing does not prevent the detection of pump degradation. Because the throttle position of the applicable globe valve is administratively controlled, the flow rate for the quarterly testing is essentially a fixed value. This is no different than a typical test scenario where flow is measured and adjusted to a fixed reference value.*

**RAI PR-05-1**

There is confusion as to which pumps are affected by this alternative request. Section 1 states that the components affected by the proposed alternative are all of the pumps contained within the inservice testing program scope. Section 5 states that the proposed alternative is applicable to the pumps listed in Table PR-05. The pumps listed in Table PR-05 are all horizontal centrifugal pumps and vertical line shaft pumps. However, Section 3 lists as an applicable Code requirement ISTB-5323, "Comprehensive Test Procedure," which

is applicable to positive displacement pumps. Please state which section of the alternative request provides the correct listing of pumps, Section 1 or Section 5. If Section 5 is correct, please explain why ISTB-5323 is listed as an applicable Code requirement.

**PR-05-1 Response:**

*Relief Request PR-05 is being retracted. No further NRC review is required.*

**RAI PR05-2**

The NRC staff does not have an issue with Code Case OMN-19, provided that a Pump Periodic Verification Test Program is in place. This test program will insure that the pumps will be able to meet their design basis accident flow rates and differential pressures. Discuss why a Pump Periodic Verification Test Program is not included in the proposed alternative, as was done in alternative request P-6 for Surry Power Station Unit 1 and alternative request P-5 for Surry Power Station Unit 2. Mandatory Appendix V in the 2012 Edition of the ASME OM Code provides a Pump Periodic Verification Test Program that meets the NRC staff's concerns. Code Case OMN-19 and the 2012 Edition of the ASME OM Code are not yet endorsed in 10 CFR 50.55a.

**PR-05-2 Response:**

*Relief Request PR-05 is being retracted. No further NRC review is required.*

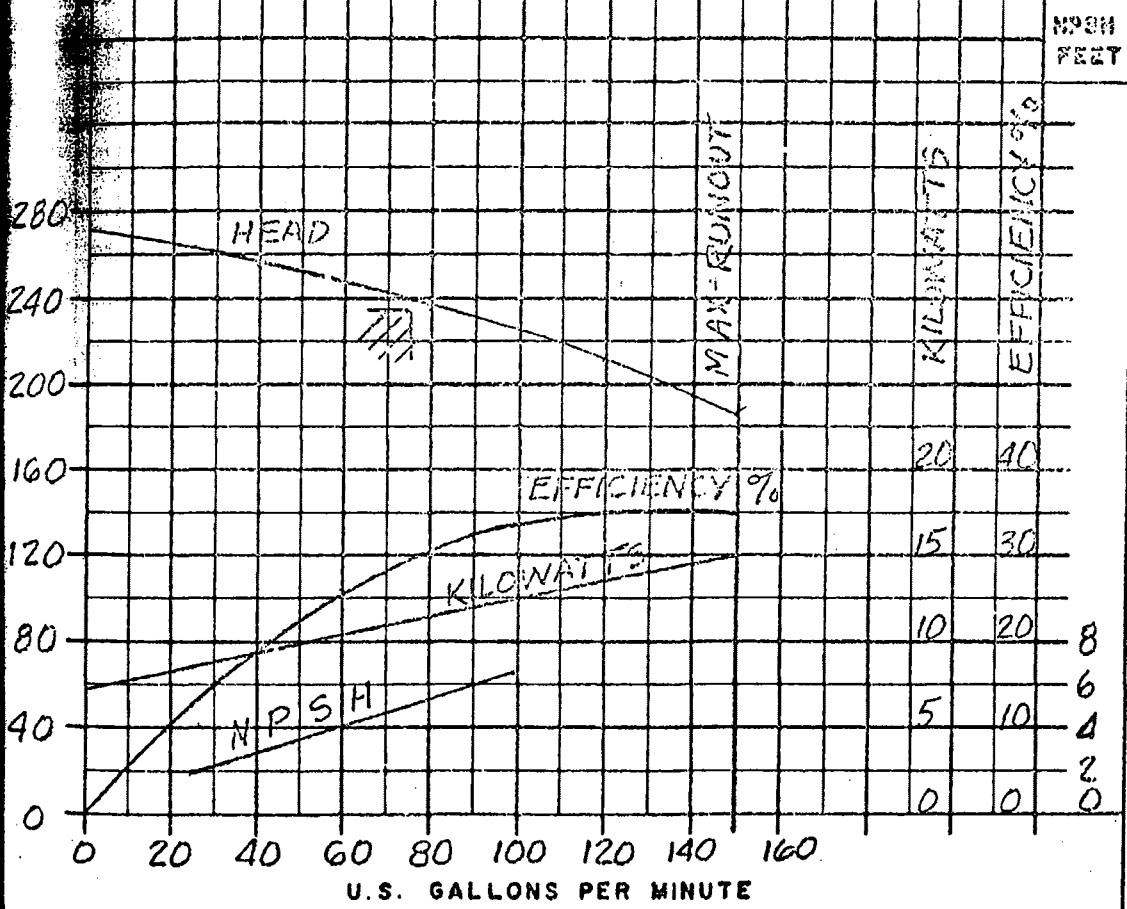
<b>CRANE</b>		<b>CHEMPUMP DIVISION • CRANE CO.</b>			<small>IMPORTANT</small> WE HAVE ASSIGNED THIS NUMBER AS OUR IDENTIFICATION OF YOUR ORDER. PLEASE REFER TO IT AT ALL TIMES. IT WILL HELP US TO SERVE YOU.	
		WARRINGTON INDUSTRIAL PARK • WARRINGTON, PA. 18976 (215) 343-6000      TEL:FX 84-6441      TWX 510-665-8670				
<b>CHEMPUMP SEAL-LESS LEAKPROOF PUMPS</b>						
DATE ENTERED	CUSTOMER ORD. NO.	C & D	PUR	TERM	FACTORY ORDER NO.	
10-26-76	546-CAM-248051-BE				ZFN-2311-5.5	
DANIEL INTERNATIONAL CORP. CALLAWAY PLANT HIGHWAY CC-3 MILES NORTH OF HIGHWAY 94 PORTLAND, MO  10766004-31-2 WESTINGHOUSE ELECTRIC CORP. NUCLEAR ENERGY SYSTEMS P.O. BOX 355 PITTSBURGH, PA 15230					SHIPMENT IS F.O.B. WARRINGTON, PA.  TERMS: NET 30 DAYS	
					PAGE 5 OF 10 CO #2	
					MARK CASES P.O. #546-CAM-248051-BE SPIN NO. SCP-CAPBA-01 & 02	
<b>ASME</b>						
IP	VIA			SHPG. DATE	CUSTOMER ORD. NO.	
COL <input checked="" type="checkbox"/>	PPD <input type="checkbox"/>	T/A <input type="checkbox"/>	BEST WAY <input type="checkbox"/>	PARTIAL <input type="checkbox"/>	COPIES 2-17-77	546-CAM-248051-BE
EM	QTY.	DESCRIPTION			CODE	UNIT PRICE
PRICE INDICATED IS CURRENT, PRICE INVOICED WILL BE THAT IN EFFECT AT TIME OF SHIPMENT						
	2	CHEMPUMP MODEL(N)GVH-10K-12H-1S S/N 23445-7 & 8 TAX EXEMPT #00167 BORIC ACID TRANSFER PUMP			101	
<b>APPLICATION DATA</b>						
LUID	4% H3 BO3			VAPOR PRESS @ P.T.	PSI	
D. HEAD	235 (2)	FT.	PUMPING TEMP	175	°F	SUCT. PRESS
CAPACITY	75 (2)	U.S. GPM.	SP. GR. @ P.T.	1.02		NPSH AVAIL
COOLANT FLOW		GPM	VISC. @ P.T.		CPS	NPSH REQ'D
						8 (2)
<b>MATERIALS OF CONSTRUCTION</b>						
IMPELLER DIA	8-1/16	IN.	BEARINGS	CG TYPE B	CIR. TUBE ASSY	316SS
BEARING HOUSINGS	316SS		STATOR & ROTOR	316SS	P.C. GASKET	TEF. ENV.
IMPELLER HOUSING & IMPELLER	316SS		JOURNALS	M-3	MTR. GASKET	TEF. ENV.
<b>MODEL DATA</b>						
DISCHARGE	1" 150# RF FLG.	DESIGN PSI	150# @ 250°F	NET WT. OF UNIT	285	LBS
SECTION	2" 150# RF FLG.	HYDROTEST PSI	ASME	FOUNDATION	SEISMIC BASE	
<b>MOTOR DATA</b>						
PHASES	3 3-2-1	FULL LOAD AMPS	22.0	TCO SETTINGS	EXTERNAL 257	
VOLTS	60	FULL LOAD KW	15.5	<input checked="" type="checkbox"/> TOTAL ENCL.	<input type="checkbox"/> EXPL. PROOF LABEL	<input type="checkbox"/> EXPL. PROOF DESIGN
VOLTAGE	480	START KVA	69.2	STATOR FILL	SOLID (2)	
SPEED	3450	RPM	INSULATION CLASS	H 100°C		
NO.	ADDENDUM NO.		INSPECTION, TEST AND PROCEDURES TO APPLY (SEE FORM P-2)			
PRINT	SPECIAL		(21)(23)(30A)(31C)(33B)(36)			
CERTIFIED DIMENSION PRINTS	CROSS SECTION DRAWINGS	CERTIFIED PERFORMANCE CURVES	TYPICAL PERFORMANCE CURVES	INSTRUCTION MANUALS	WIRING DIAGRAMS	PARTS LISTS
1R+2	1R+2	1R+2	0	SEE SPEC. INSTR.	3	3
SPECIAL NOTES AND INSTRUCTIONS ON PAGES 7, 8, 9, 10						
CUSTOMER'S REQ'D DATE 6-30-77						
PER CURVE A-73664 (2)						
PREPARED BY: W.H. WELKER QUALITY CONTROL						

SING D-16758	SIZE 2" X 1"	MODEL GVH-10K
R C-38508	EYE AREA	RPM 3450
ANT SCP, SPINCSAPBA-01, BORIC ACID TRANSFER PUMP		

JOB # N-23445  
SERIAL # 23445-7

Curves are based on shop test while handling clear water at 20°C and at sea level. Performance guarantees apply at rating point only. Efficiencies shown are overall wire to water. Numbers beneath model designations indicate full load kilowatt ratings for the referenced motor load lines. When pumping fluids with specific gravities other than 1.0, select pump model (see load line) to handle load equivalent in feet of water, e.g. 40 feet of fluid of Sp. Gr. 1.3 is load equivalent of 40 feet (1.3x40) of water. Please note that this is merely a short cut method to estimate the model required. For proper model selection, especially when handling a fluid with a Sp. Gr. greater than 1.7, consult your Chemump representative or the factory.

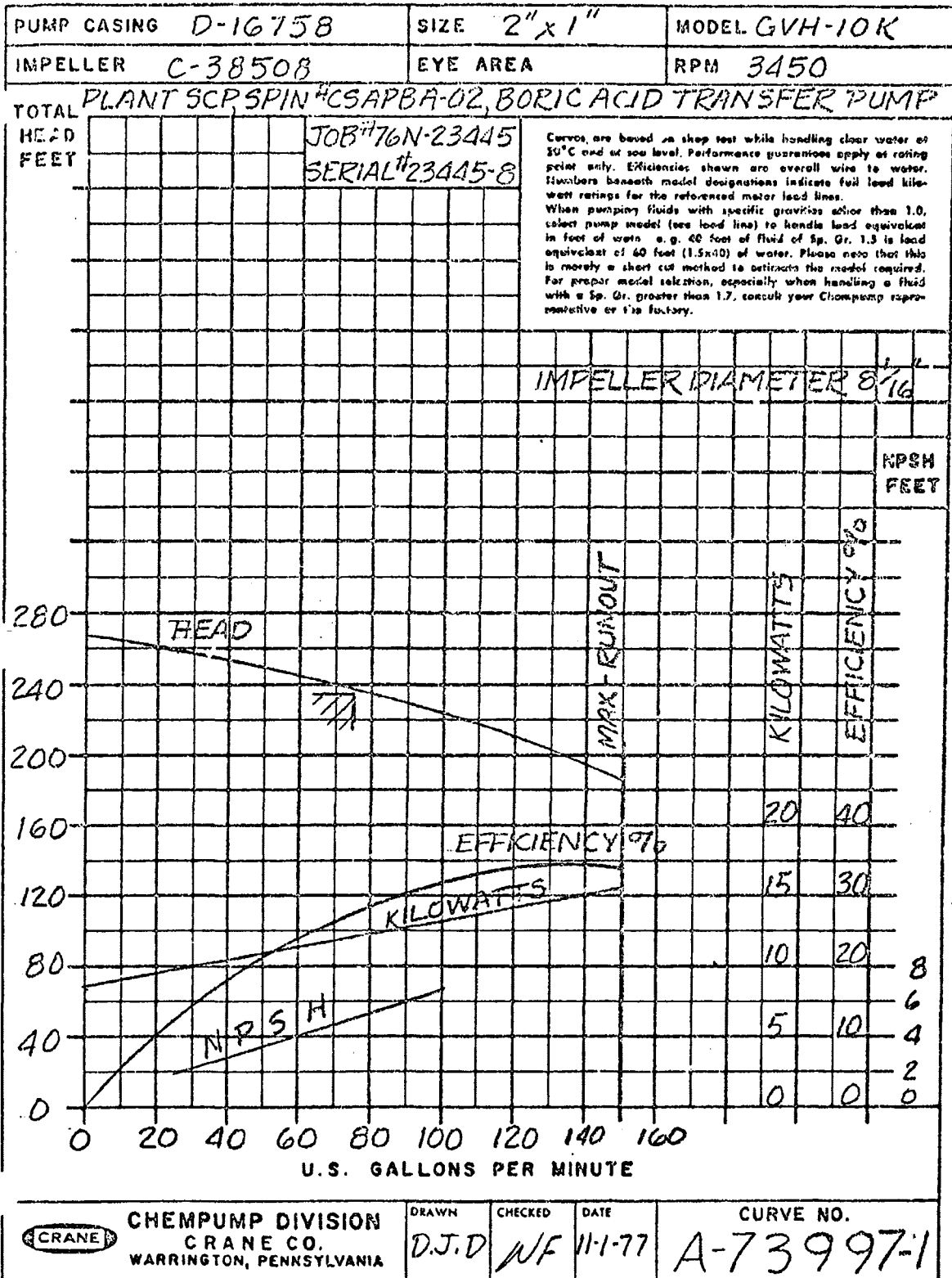
IMPELLER DIAMETER 6 1/2"



<b>CHEMPUMP DIVISION</b> CRANE CO. WARRINGTON, PENNSYLVANIA	DRAWN	CHECKED	DATE	CURVE NO.
	D.J.D	WF	11-1-77	A-739961

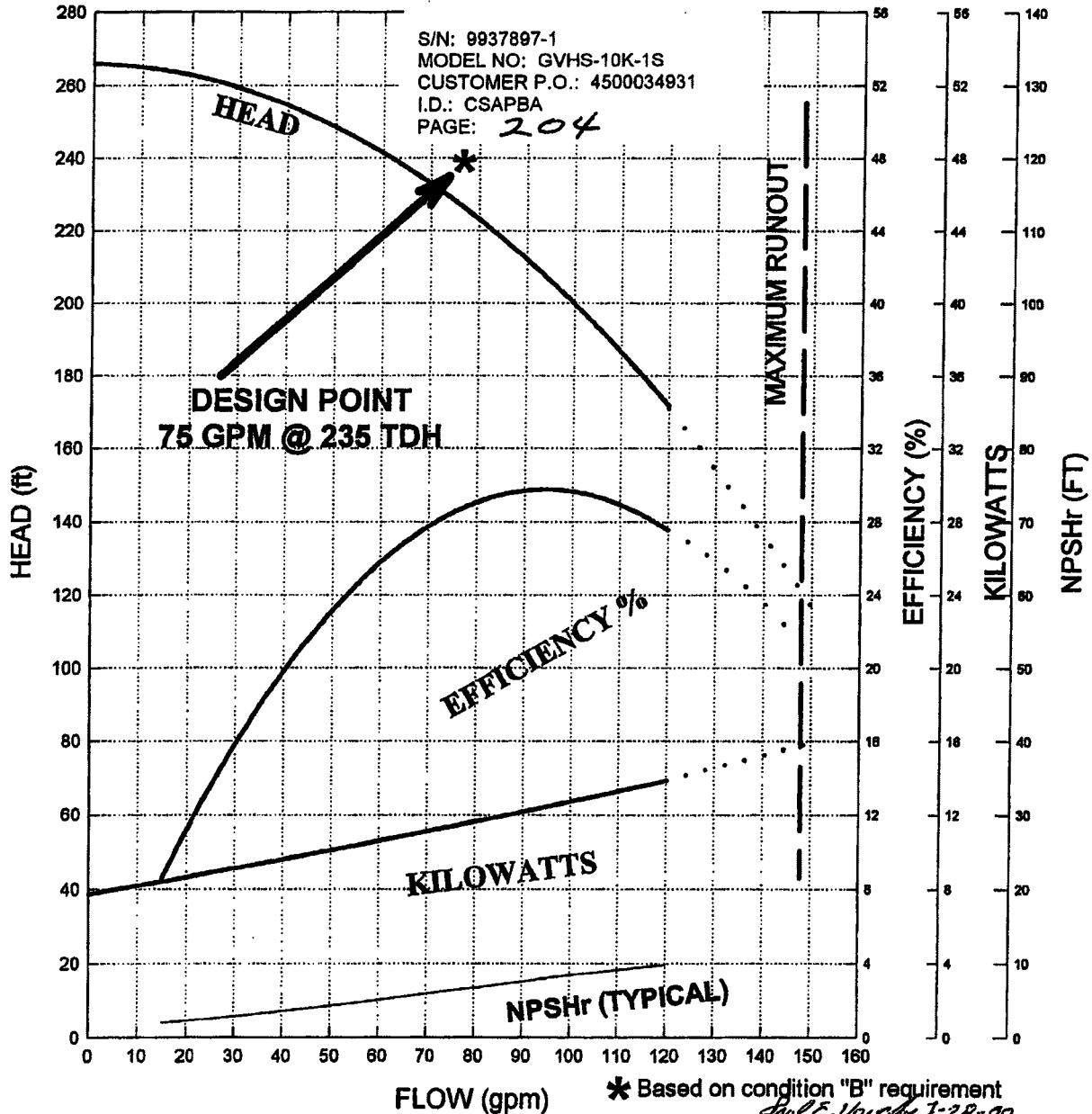
REV. 1 4-12-78 ADDED MAX RUNOUT, DESIGN POINT & NPSH D.J.D





PUMP CASING	SIZE	2 x 1 x 10	MODEL	GVHS-10K-1S
IMPELLER	IMP. DIA.	8.063	RPM	3450
SERIAL NUMBER 9937897-1	WESTINGHOUSE ELECTRIC CORP P.O. # 4500034931			

Curves are based on shop test while handling clean water at 20°C and at sea level. Performance guarantees apply at rating point only. Efficiencies shown are overall wire to water. Numbers beneath model designations indicate full load kilowatt ratings for the referenced motor load lines. When pumping fluids with specific gravities other than 1.0, select pump model (see load line) to handle load equivalent in feet of water. e.g. 40 feet of fluid of Sp. Gr.=1.5 is load equivalent of 60 feet (1.5x40) of water. Please note that this is merely a short cut method to estimate the model required. For proper model selection, especially when handling a fluid with a Sp. Gr. greater than 1.7, consult your Chemump representative or the factory.



<b>CRANE</b>	<b>CHEMPUMP</b>	DRAWN	DATE	CURVE	REV.
	A DIVISION OF CRANE PUMPS & SYSTEMS WARRINGTON, PA	SAJ	07-27-00	<b>AA-73345</b>	<b>1</b>