AmerenUE Callaway Plant PO Box 620 Fulton, MO 65251

July 21, 2003

U. S. Nuclear Regulatory Commission Attn: Document Control Desk Mail Stop P1-137 Washington, DC 20555-0001

ULNRC-04876



Ladies and Gentlemen:

DOCKET NUMBER 50-483 Callaway PLANT UNIT 1 UNION ELECTRIC CO. FACILITY OPERATING LICENSE NPF-30 LICENSEE EVENT REPORT 2003-005-00

Gas binding of containment spray pumps due to valve testing.

The enclosed licensee event report is submitted in accordance with 10CFR50.73(a)(2)(i)(B) to report gas binding of both containment spray pumps due inadequate filling and venting of system piping after conducting surveillance valve testing.

Very truly yours,

Warren A. With

Warren A. Witt Manager, Callaway Plant

WAW/ewh

Enclosure

JEDE

a subsidiary of Ameren Corporation

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 cc: Mr. Thomas P. Gwynn Acting Regional Administrator U.S. Nuclear Regulatory Commission Region IV 611 Ryan Plaza Drive, Suite 400 Arlington, TX 76011-4005

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

Mr. Jack N. Donohew (2 copies) Licensing Project Manager, Callaway Plant Office of Nuclear Reactor Regulation U. S. Nuclear Regulatory Commission Mail Stop 7E1 Washington, DC 20555-2738

Manager, Electric Department Missouri Public Service Commission PO Box 360 Jefferson City, MO 65102

Records Center Institute of Nuclear Power Operations 700 Galleria Parkway Atlanta, GA 30339

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NRC FORM 36	6		U.S. NUCLEAR REGULATORY					APPROVED BY OMB NO. 3150-0104 EXPIRES 7-31-2004									
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Failure of both	containn	nent sp	rav t	oump	s due to air b	indin	a.										
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MODE		1		20.2	2201(b)		20.220)3(a)(3)(ii)		50.73(a)(2)(ii)(B)		50.73	(a)(2)(ix)(A)	
10. POW	10. POWER			20.2	20.2201(d) 2		20.220)3(a)(4))		50.73(a)(2)(iii)			50.73	(a)(2)(x)		
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ta e a presiduit su di Marine a conte				20.2	2203(a)(3)(i)		50.73(a)(2)(ii)(A)	1	50.73(a)(2)(v	iii)(B)				an saadaa ta	
					12.	LICE	INSEE	CONT	ACT FOR T	HIS	LER						
NAME										TE	LEPHONE NUM	BER (Inclu	ide A	rea Co	de)		
Mark A. Rei	dmeyer											(573	8) 6	76-43	306		
		13. CO	MPL	ETE	ONE LINE FO	R EA	CH CO	MPON	ENT FAIL	URE	DESCRIBED	IN THIS	REF	ORT			
										-							
CAUSE	SYSTEM	STEM COM		NENT	MANU- FACTURER		Portabli To epix	E	CAUSE		SYSTEM	COMPON	IENT	F/	MANU- ACTURER	TO EPIX	
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YES (If y	es, comp	lete EX	PEC	TED	SUBMISSION	DAT	E)		NO		DATE	•			1		
16. ABSTRAC	F (Limit to	1400 s	pace	s, i.e.	, approximate	ly 15	single-s	paced	typewritten	line	es)						
On 5/22/03, v	vith Calla	away P	lant	in M	ode 1 at 100	perc	ent po	wer, s	urveillanc	e te	sting was be	ing perfe	orm	ed inv	olving "E	3"	
Containment	Spray pu	mp, Pl	INU	IR' I	Upon starting	g, the	e pump	failed	i to develo	op n	iormai discha	irge pres	sur	and	now for		
approximately	y 5 minut	tes. Th	ie pi	imp t	inen develop	ea pi	ressure	and the	ne test was		mpleted satis	SIACTOFIL	y. 2 DE2		quent revi	lew	
accornined the	e pump l	nau Dee	n ga tior	as DO	unia. Untrasc	JIIIC (that (zams :	and dy	Serou ser	nuiñ mm	DENO1A L-	d ovneri	r Cf	101B	was wate	a sonu and	
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operable. An extent of condition review revealed that Containment Spray pump, PEN01A had experienced a 2 minute gas binding event on 4/29/03. Ultrasonic exams and venting were conducted and verified that PEN01A was operable. It was determined that both pumps were gas bound due to an inadequate system venting configuration after Mode 5 valve testing on 3/30/03 resulting in both trains of Containment Spray being inoperable upon entering Mode 4 on 3/31/03 until PEN01A was run on 4/29/03, and "A" train was declared operable. This resulted in noncompliance with Technical Specification 3.6.6 for a period of time greater than allowed. Potential corrective actions being evaluated include installing additional vent valves, and procedure improvements to address dynamic venting.

FACILITY NAME (1)	DOCKET (2) NUMBER (2)	Ι <u>ι</u>	ER NUMBEF	t (6)			PAGE (3)
Callaway Plant Unit 1		YEAR	SEQUENTI NUMBER	AL	REVISION NUMBER			<u> </u>
Vanatray i mit vitte .	05000483	2003	- 005	•	00	2	OF	_
ATIVE (If more space is required, use additional states additional	al copies of NRC Form 366	Ā) (17)						
I. DESCRIPTION OF THE REPORTA	<u>BLE EVENT</u>							
A. REPORTABLE EVENT CLASSI	IFICATION							
This event is reportable per 10CFR50).73(a)(2)(i)(B), an oper	ation or cond	lition prohit	oitec	l by Techn	ical Spe	ecification	ns.
B. PLANT OPERATING CONDITI	ONS PRIOR TO THE F	EVENT						
Callaway Plant was in Mode 1 at 100	percent power.							
C. STATUS OF STRUCTURES, SY	STEMS OR COMPON	ENTS THA	T WERE IN	IOP	ERABLE	AT TH	E STAR	Г
OF THE EVENT AND THAT CO	ONTRIBUTED TO THE	EVENT	_	-	_	-		
There were no structures, systems, or	components inoperable	at the time	of the event	that	t contribute	ed to thi	s event.	
D. NARRATIVE SUMMARY OF T	THE EVENT, INCLUDI	NG DATES	AND APP	ROZ	XIMATE 1	rimes		
 "B" Containment Spray Pump, PEN0 indications were below normal. Loca After approximately 5 minutes, local occurring. PEN01B was secured and PEN01B was started for a second tim satisfactorily and PEN01B was declar Subsequent review determined that P PEN01B was declared inoperable sta piping (Collaway system designator I 	1B [IEEE component de ally, discharge pressure is pump noise levels incre the local test gauge inst is and all indications we red operable. EN01B had experienced rting at 0209, 5/22/03.	ssignator P]. indication ar ased and it v allation was re normal. S I gas binding Plant person	Upon start id noise leve vas suspecte checked fo Surveillance g during the nel vented t	ing, els a ed th r pro test init he c	, initial pre also were b hat pump co oper opera ting was co ial pump ro ontainmen	ssure ar velow no avitation tion. A complete un at 02 t (ctmt)	nd flow ormal. n was t 0242, d 210 and spray	
of gas was vented from the suction su present in an associated eductor line. eductor line were dynamically vented longer present. PEN01B was declare	N) [IEEE system desig upply line. Ultrasonic te No other voids were fo 1 for approximately 30 n ed operable at 2134.	sting (UT) of und in the "I ninutes. A p	lata was coll B" train of the ost-run UT	in P lecte he E four	ed which re N system. nd that the	evealed The pu void wa	a void ump and as no	
As part of an extent of condition revie Refueling Water Storage Tank (RWS Residual Heat Removal (RHR) pump these lines contained voids. A void (recirculation line of the "A" train con	ew, the "A" train Ctmt S ST) emergency core cool o return to the RWST he smaller than that found trainment spray pump.	pray pump, ling system (ader were al in the "B" tr Approximate	PEN01A ar (ECCS) pun so inspected ain) was fou ly 1 second amically ve	nd ann p si I via I nd i of g nted	ssociated p uction head UT to det in the asso gas was ve and the ve	biping, t der and termine ciated e nted fro bid was	he the if any of ductor on the removed	i.
The RWST suction header and the R	HR pump return line we	re also inspe	ected and fo	und	to be wate	r solia.		
The RWST suction header and the R The extent of condition review revea [IEEE component designator P] and y time without discharge pressure and I approximately 1/2 of the expected lev 250 psig for 166 seconds.	HR pump return line we led that on 4/29/03, a sin went unrecognized. PE low motor current. Rev vel for 132 seconds. Th	nilar gas bir N01A was te iew of comp e pumps disc	ected and fo iding occurr ested with aj uter data sh charge press	und enco opro ows sure	to be wate e had occu oximately 2 the motor did not rea	rred to 2 2 minute current ach the	PEN01A es run t was expected	

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	FACILITY NAME (1)	DOCKET (2) NUMBER (2)	L	ER NUMB	R (6)			PAGE (3)
			VEAD	SEQUEN	TIAL	REVISIO	DN		
	Callaway Plant Unit 1	05000483	2003	- 005	-	00	3	OF	
AT	VE (If more space is required, use additional o	copies of NRC Form 366	A) (17)						
	revealed no adverse performance from e	either pump.							
	The cause of the gas binding of PEN01A	A and PEN01B was d	etermined to	be an ina	lequa	ate confi	guration t	o statical	ly
	fill and vent the EN system piping follo	wing surveillance test	ing of valve	s ENHV0	001 a	nd ENH	V0007 (C	tmt Reci	rc
	Sump to Ctmt Spray Pump A and B Con	ntrol Valves respective	ely). During	g the Sprin	g Rel drain	liability ing part	Outage (S	SRO),	
	The subsequent restoration of the EN sy	stem did not adequate	elv fill and v	ent the El	svst	em caus	ing both t	rains of	•
	ctmt spray to have been incapable of me	eting assumed Engine	eered Safety	Feature (ESF)	respons	e time lim	its stated	ij
	Final Safety Analysis Report (FSAR) Ta	able 16.3-2. The surv	eillance test	ting of EN	IVOC	001 and	ENHV00	07 was	
	performed with Callaway Plant in Mode	5, and the EN system	n is not requ	ired to be	opera	ble unti	I Mode 4,	thus the	E
	inoperable upon entering Mode 4 until	when the next pump s	arveillance	was succe	, oou sfullv	u trains y comple	or cunt sp eted.	ray were	
						· · · · ·			_
	For containment spray, the maximum E	SF response time limi	t is 32 seco	nds as doc	imen	ted in F	SAR chap	ter 16 Ta	b
	16.3-2 and is measured from the receipt	of a start signal until	pump aiscn	arge press	ire ec	quais or	exceeds 2	SU psig.	n
	the air from the system to the RWST an	d following the nump	runs were o	canable of	meeti	ing all d	esign reau	irements	P
	However, since it took greater than 32 s	econds for each of the	ese pumps to	o complete	ly pri	ime ther	nselves, th	ney were	•
	However, since it took greater than 32 s incapable of meeting the ESF response	econds for each of the time limits. Compute	ese pumps to r data for Pl	o complete EN01A do	ly pri cume	ime ther nts that	nselves, th it took 16	ney were 6 seconds	
	However, since it took greater than 32 s incapable of meeting the ESF response achieve the required discharge pressure	econds for each of the time limits. Compute of 250 psig. Comput	ese pumps to r data for Pl er data for F	o complete EN01A do PEN01B d	ly pri cume cume	ime ther nts that ents that	nselves, th it took 16 it took 33	ney were 6 seconds 19 second	ls
	However, since it took greater than 32 s incapable of meeting the ESF response achieve the required discharge pressure to achieve the required discharge pressure	econds for each of the time limits. Compute of 250 psig. Comput re of 250 psig.	ese pumps to r data for Pl er data for F	o complete EN01A do EN01B d	ly pri cume cume	ime ther nts that ents that	nselves, th it took 16 it took 33	ney were 6 seconds 19 second	ls
	However, since it took greater than 32 s incapable of meeting the ESF response achieve the required discharge pressure to achieve the required discharge pressure T/S Surveillance Requirement (S/R) 3.3	econds for each of the time limits. Compute of 250 psig. Comput re of 250 psig.	ese pumps to r data for Pl er data for F ation of ESF	e complete EN01A do PEN01B d	ly pri cume cume cume	ime ther nts that ents that are wit	nselves, th it took 16 it took 33 hin limits	ey were 6 seconds 19 second specified	is is
	However, since it took greater than 32 s incapable of meeting the ESF response achieve the required discharge pressure to achieve the required discharge pressure T/S Surveillance Requirement (S/R) 3.3 FSAR Table 16.3-2, and neither Ctmt S	econds for each of the time limits. Compute of 250 psig. Comput re of 250 psig. 0.2.10 requires verifica pray pump was able t	ese pumps to r data for Pl er data for F ation of ESF o satisfy tha	complete EN01A do PEN01B d response t time lim	ly pri cume cume cume times	are wit R 3.0.1	hin limits	tey were 6 seconds 19 second specified a failure	is is
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	However, since it took greater than 32 s incapable of meeting the ESF response to achieve the required discharge pressure to achieve the required discharge pressure T/S Surveillance Requirement (S/R) 3.3 FSAR Table 16.3-2, and neither Ctmt S meet a S/R is a failure to meet the T/S I not constitute a failure to comply with T Function in Table 3.3.2-1 shall be OPEI associated with the Ctmt Spray pumps v T/S 3.6.6 states "Two containment spray Spray pumps PEN01A and PEN01B we equal to or greater than 250 psig within for a total time span of 29 days, 1 hour, for a total time span of 52 days, 18 hour until PEN01A was declared operable at Action F.1 states for two containment sp that within 1 hour, initiate action to place within 37 hours. Failure to complete th and is reportable per 10CFR50.73(a)(2) After discovering that both trains of Ctr on ctmt pressure of the delay in the Ctru determined that maximum ctmt pressure	econds for each of the time limits. Compute of 250 psig. Compute of 250 psig. Comput re of 250 psig. 2.2.10 requires verifica pray pump was able t CO, however for T/S C/S 3.3.2 because T/S RABLE." and for the were not affected nor were not affected nor y trains and two conta ere inoperable because 32 seconds. PEN01A 28 minutes. PEN01A 28 minutes. PEN01A 28 minutes. Both t 0432, 4/29/03 for a to pray trains inoperable ex the unit in Mode 3 e Actions for T/S 3.6. (i)(B), an operation of th Spray were inopera- t Spray pumps reaching e would still peak below	ese pumps to r data for Pl er data for Pl er data for F ation of ESF o satisfy tha 3.3.2, the g 3.3.2 LCO s Ctmt Spray disabled by cimment cool e they could was inoper rains of Ctm otal time spa , to enter LC within 7 hou 6 and T/S 3 r condition p able, evaluating 250 psig bw the ctmt	response to complete EN01A do EN01B d response t time lim gas binding states "The Function, the Ctmt S ling trains not start a rable from nt Spray wan of 29 do CO 3.0.3 in urs; Mode .0.3 const prohibited tions were design pro-	ly pri cume: cume times t. S/I of bc ESF. he C pray shall ad ac 0304 0304 ere in ys, 1 nmed 4 with utes ssure perfo presse	ime ther nts that ents that are witk R 3.0.1 oth Ctm AS insti- tmt pres pump fa be OPE hieve a , 3/31/0 , 3/31/0 noperabl hour, 24 liately w hin 13 h a failure echnical ormed to sure. Thus,	hin limits it took 16 it took 33 hin limits states that t Spray purumentation sure chan ailures. RABLE." discharge 3 until 043 3 until 212 e from 03 3 minutes. hich then ours; and to compl Specifica determine ie evaluatii gas bindii	specified a failure mps wou on for eac nels Both Ct pressure 32, 4/29/0 23, 5/22/0 04, 3/31// T/S 3.6 requires Mode 5 y with T/ tions. e the effe ons ng of the	
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	FACILITY NAME (1)	DOCKET (2) NUMBER (2)		ER N	NUMBER (5)		PAGE (3))
	Callaway Plant I Init 1		YEAR	SI	EQUENTIAL NUMBER	REVISION NUMBER			
	Ganaway Flant Onit 1	05000483	2003	-	005	- 00	4	OF	6
IARR/	ATIVE (If more space is required, use additional copie	es of NRC Form 366	4) (17)						
	E. METHOD OF DISCOVERY OF EACH	I COMPONENT,	SYSTEM F	AIL	URE, OR	PROCEDU	RAL E	RROR	
	The gas binding of PEN01B was discovered review identified a similar gas binding even	d during surveillar at involving PEN0	ce testing c IA on 4/29/	on 5/2 /03.	22/03. A :	subsequent e	extent o	of condition	on
II.	EVENT DRIVEN INFORMATION								
	A. SAFETY SYSTEMS THAT RESPONI	DED							
	Not applicable for this event.								
	B. DURATION OF SAFETY SYSTEM IN	OPERABILITY							
	Both trains of Ctmt Spray were inoperable of ENHV0007 in Mode 5. The time of Inoper entered at 0304, 3/31/03. "A" train of the H declared operable at 0432, 4/29/03. "B" tra tested and declared operable at 2123, 5/22/0 This resulted in a total Inoperable time spar Inoperable time span of 52 days, 18 hours, of 29 days, 1 hour, 28 minutes for both train C. SAFETY CONSEQUENCES AND IMI Evaluations were performed to determine the included radiological consequences and ctm	due to gas introdu ability for both "A IN system remaind in of the EN syste 33. n of 29 days, 1 hou 19 minutes for "B ns of the EN syste PLICATIONS OF the impact of the d nt pressure-temper	ed during s " and "B" (d inoperabl m remained r, 28 minut ' train of the n. THE EVE clayed Ctmt ature analy	surve Ctmt le un l inop ees fo e EN NT. t Spra	illance tes Spray sys til PEN01 perable un r "A" train system, a ay pump s	ting of ENH tems started A was succe til PEN01B n of EN syst nd a total In pin-up time	IV000) when essfully was su em, a t toperab	l and Mode 4 w tested an accessfully otal le time sp	vas d y oan
	The delay in the delivery of ctmt spray to the spray's removal of iodines from the ctmt atta appreciable impact on Low Population Zon values, but the increase would not represent in spray initiation, the value for projected the reported value.	the ctmt environmed mosphere to the su te (LPZ) doses. Et t a more than mini- hyroid dose to Con	nt could ha mp. This c cclusion Ar mal increas atrol Room	ve re lelay ea Bo se. A perso	sulted in a ed spray v oundary d fter accou onnel was	a delay in the yould have of ose could ex- nting for the still bounde	e initiat only mi aceed F e effect ed by th	tion of the nimal SAR repo s of the do e FSAR	e orted elay
	In the Pressure-Temperature evaluation, it y Ctmt pressure to exceed the current FSAR would result in a peak calculated pressure of is 60 psig. Peak post-accident pressure ren	was shown that the reported value for of 50.33 psig, how nains bounded by	e spray dela calculated ever, the Do he 60 psig	y wo peak esign ctmt	ould cause post-accio Basis Lir design pro	calculated plent pressurents for Fissessure.	eak po e. The ion Pro	st-LOCA delay of s duct Barr	spray iers
	The impact of the increase in calculated pro in ctmt that is required to operate during a against the elevated LOCA pressure curve equipment in Ctmt remained qualified follo	essure was review LOCA and is qual due to the Ctmt Sj owing an increase	ed for impa- ified in acco oray pump s in pressure	ct on ordar low : to 50	Equipment ace with N start. This 0.33 psig.	nt Qualificat UREG 058 review dete	tion. T 8 was r ermined	he equipn eviewed l that all tl	nent he
	A probabilistic risk assessment was also pe significance.	erformed and deter	mined that	this e	event was	of very low	/no risk	:	

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	FACILITY NAME (1)	DOCKET (2) NUMBER (2)		LER NU	MBER (6)			PAGE (3)	
	Callaway Plant Unit 1		YEAR	SEQ NL	UENTIAL IMBER	REVISION NUMBER		1	
	Canaway Flant Ont 1	05000483	2003	- (005 -	00	5	OF	
RRA	TIVE (If more space is required, use additional c	opies of NRC Form 366	4) (17)						
II.	CAUSE OF THE EVENT								
	The cause of the event was gas intrusion testing. Failure to recognize abnormal in abnormal indications contributed to the e	due to inadequate fil ndications during pun event.	ling and ver p operation	nting at n and d	iter perfo elayed do	rming surv cumentatio	eillanco on of th	e valve lose	
	 A formal Root Cause Analysis (RCA) te binding event and subsequent failure to it. 1. No vent valve was installed on static fill and vent techniques. 2. No dynamic venting was perfor 3. A 1996 evaluation failed to recommended 	eam was assembled to identify this problem. the pump casing. Th rmed. ognize pump PEN014	investigate The RCA is lack of ve A casing vo	e and de conclu ent valv	etermine ded that t de preven	the root can here were i ts proper v	use(s) o 3 causa enting t	of the gas l factors: using onl	у
IV.	CORRECTIVE ACTIONS								
	Ultrasonic testing (UT) data was collected found in the "B" train of the EN system. minutes. A post-run UT found that the v 5/22/03.	ed which revealed a v The pump and educ void was no longer pr	oid present tor line wer esent. PEN	in an e re dynai 101B w	ductor lin mically v as then d	ne. No oth ented for a eclared ope	er void: pproxir erable a	s were nately 30 t 2134,	
	As part of an extent of condition review, Storage Tank (RWST) emergency core of (RHR) pump return to the RWST header voids. A void (smaller than that found in containment spray pump. Approximatel pump and associated eductor line were of the RHR pump return line were also insp	, the "A" train pump (cooling system (ECC r were also inspected n the "B" train) was f ly 1 second of gas wa lynamically vented ar pected and found to b	PEN01A) a S) pump survia UT to c ound in the s statically a the void e water soli	and assection he letermine educto vented was reprid.	beciated p eader and ne if any r recircul from the noved. 1	iping, the F I the Residu of these lin ation line of suction sup The RWST	Refuelin al Hea les cont of the ". oply lin suction	ng Water t Remova cained A" train e. The ", header a	al A" ind
	Recommended corrective actions to prev Modification of the cu pump to provide for pr Provide plant procedure	vent recurrence that a urrent seal piping of P roper static fill and ve	re being eva EN01A and ent capabilitions for out	aluated d PEN0 ties.	include: 1B plus i	install a ver	nt valve	for each	
	 Revise plant procedure Enhance plant procedure pump parameters. 	ures to include monito	oring comp	uter ind	lication o	f motor cu	rents in	n addition	ı to
V.	PREVIOUS SIMILAR EVENTS								
	NUREG 1022 requires a review of histo	orical events within th	e last 3 yea	rs, how	ever, nor	ne were ide	ntified.		
	A review of LERs within the last three y 2002-001-00, in which foreign material	vears documents one caused the "A" Moto	other gas bi r Driven Au	inding e uxiliary	vent. Th Feedwat	his was doc ter pump to	umente becon	d in LER ie gas	•

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	FACILITY	(NAME (1)	DOCKET (2) NUMBER (2)	LE	R NUMBER (6)	PAGE (3)			
	Callaway Plant Unit 1			YEAR NUMBER		REVISION NUMBER				
	Uanaway I		05000483	2003	- 005	- 00	6	OF		
RA	TIVE (If more space i	is required, use additional o	copies of NRC Form 366	4) (17)						
Ί.	ADDITION/	AL INFORMATION								
	The system and respectively.	component codes listed	below are from the II	EE Standard	l 805-1984 an	d IEEE Stan	dard 80	3A-1984	4	
	System:	BE								
	Component:	Р								
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