Pr j j ^ov lc Prpmbkaba*Pbafj bkq @lk`bkqo^qflk A^q^) P^k Co^k`fp`l ?^v) @^ifclokf^) T^qbo Vb^o /--0

?v M^ri >+ ?r`e^k^k ^ka Kbfi H+ D^kgr

Fk `llmbo^qflk tfqe qeb @>ICBA ?^v*Abiq^ Moldo^j) ^ka qeb R+P+ >oj v @lomp lc
Bkdfkbbop) P^k Co^k`fp`l Afpqof`q

A^q^ Pbofbp ..0

R+P+ Abm^oqj bkq lc qeb Fkqbofl o
R+P+ Dblildf`^i Prosbv

R+P+ Abm^oqjbkq lc qeb Fkqboflo
D^ib >+ Kloqlk) Pb`obq^ov

R+P+ Dblildf`^i Prosbv
@e^oibp D+ Dolr^q) Afob`qlo

R+P+ Dblildf`^i Prosbv) Obpqlk) Sfodfkf^7 /--2

Clo p^ib _v R+P+ Dblildf`^i Prosbv) Fkcloj^qflk Pbosf`bp
?lu /2/53) Abksbo Cbabo^i @bkqbo
Abksbo) @L 5-//2

Clo jlob fkcloj^qflk ^_lrq qeb RPDP ^ka fqp molar`qp7
Qbibmelkb7 .*555*>PH*RPDP
Tloia Tfab Tb_7 eqqm7,,ttt+rpdp+dls,

Prddbpqba `fq^qflk7
?r`e^k^k) M+>+) ^ka D^kgr) K+H+) /--2) Prjj^ov lc Prpmbkaba*Pbafjbkq @lk`bkqo^qflk A^q^) P^k Co^k`fp`l ?^v) @^ifclokf^) T^qbo Vb^o /--07 R+P+ Dblildf`^i Prosbv A^q^ Pbofbp ..0) 13 m+

@lkqbkqp

Cfdrobp

Q^_ibp

@lksbopflk C^`qlop) A^qrj) >__obsf^qflkp) ^ka >`olkvjp

Jriqfmiv	?v	Ql l_q^fk
fk`e %fk+&	/2+1-	jfiifjbqbo
cllq %cq&	+0-15	jbqbo
cllq mbo pb`lka %cq,p&	+0-15	jbqbo mbo pb`lka

Sboqf`^i `lloafk^qb fkclojq^qflk fp obcbobk`ba ql qeb Kloqe >jbof`^k Sboqf`^i A^qrj lc .655 %K>SA 55&8 elofwlkq^i `lloafk^qb fkclojq^qflk fp obcbobk`ba ql qeb Kloqe >jbof`^k A^qrj lc .6/4 %K>A /4&+

Jb^k iltbo iltt^qbo %JIIT&7 Qeb ^sbo^db lc qeb iltbo iltt^qbo ebfdeq ^_lsb qeb _lqqlj) fk cbbq) lc b^`e qfa^i a^v l_pbosba arofkd qeb K^qflk^i Qfa^i A^qrj Bml`e+ Qeb K^qflk^i Qfa^i A^qrj Bml`e fp qeb pmb`f«` .6*vb^o mbofla %.63-®45 clo s^irbp dfsbk fk qefp obmloq& ^almqba _v qeb K^qflk^i L`b^k Pbosf`b ^p qeb lc«`f^i qfjb pbdjbkq arofkd tef`e qfab l_pbos^qflkp ^ob q^hbk ^ka obar`ba ql l_q^fk jb^k s^irbp+

>__obsf^qflkp ^ka >`olkvjp

>A>MP	^rqlj^qba a^q^*mol`bppfkd pvpqbj
ATO	@^ifclokf^ Abm^oqjbkq lc T^qbo Obplro`bp
jd,I	jfiifdo^j mbo ifqbo
jS	jfiifsliq
KQR	kbmebiljbqof` qro_fafqv rkfqp
MF$_{km}$	klkm^o^jbqof` mobaf`qflk fkqbos^i
OJP	olliq*jb^k*pnr^oba %boolo&
PP@	prpmbkaba*pbafjbkq `lk`bkqo^qflk
RP@D	R+P+ @l^pq Dr^oa
RPDP	R+P+ Dblildf`^i Prosbv
TV	t^qbo vb^o %L`ql_bo .®Pbmqbj_bo 0-&

Pr j j ^ov lc Prpmbkaba*Pbaf j bkq @lk`bkqo^qflk A^q^) P^k Co^k`fp`l ?^v) @^ifclokf^) T ^qbo Vb^o /--0

?v M^ri >+ ?r`e^k^k ^ka Kbfi H+ D^kgr

>_pqo^`q

Prpmbkaba*pbaf j bkq `lk`bkqo^qflk a^q^ tbob `liib`qba fk P^k Co^k`fp`l ?^v arofkd t^qbo vb^o /--0 %L`ql_bo .) /--/¬ Pbmqb j _bo 0-) /--0&+ Lmqf`^i pbkplop ^ka t^qbo p^ j mibp tbob rpba ql j lkfqlo prpmbkaba*pbaf j bkq `lk`bkqo^qflk ^q q t l pfqbp fk Prfprk ?^v) qeobb pfqbp fk P^k M^_il ?^v) lkb pfqb fk @bkqo^i P^k Co^k`fp`l ?^v) ^ka qeobb pfqbp fk Plrqe P^k Co^k`fp`l ?^v+ Pbkplop tbob mlpfqflkba ^q q t l abmqep ^q j lpq pfqbp+ T^qbo p^ j mibp tbob `liib`qba mbofla af`^iiv ^ka ^k^ivwba clo `lk`bkqo^qflkp lc prpmbkaba pbaf j bkq+ Qeb obpriqp lc qeb ^k^ivpbp tbob rpba ql `^if_o^qb qeb lrqmrq lc qeb lmqf`^i pbkplop pl qe^q ^ ob`loa lc prpmbkaba*pbaf j bkq `lk`bkqo^qflkp `lria _b abofsba+ Qefp obmloq mobpbkqp qeb a^q^*`liib`qflk j bqelap rpba ^ka pr j j ^ofwbp qeb prpmbkaba*pbaf j bkq `lk`bkqo^qflk a^q^ `liib`qba col j L`ql_bo /--/ qeolrde Pbmqb j _bo /--0+ @^if_o^qflk `rosbp ^ka milqp lc bafqba a^q^ clo b^`e pbkplo ^ipl ^ob mobpbkqba+

Fkqolar`qflk

Pbaf j bkqp ^ob ^k f j mloq^kq `l j mlkbkq lc qeb P^k Co^k`fp`l ?^v bpqr^ofkb pvpqb j + ?lqql j pbaf j bkqp molsfab e^_fq^q clo _bkqef` lod^kfp j p ^ka ^ob ^ obpbosloj clo krqofbkqp qe^q `lkqof_rqb ql bpqr^ofkb molar`qfsfqv %E^ j j lka ^ka lqebop) .652&+ Mlqbkqf^iiv qluf` pr_pq^k`bp) pr`e ^p j bq^ip ^ka mbpqf`fabp) ^aplo_ ql pbaf j bkq m^oqf`ibp %Hr t ^_^o^ ^ka lqebop) .656 Al j ^d^iphf ^ka Hrfsfi^) .660 Cibd^i ^ka lqebop) .663&+ ?bkqef` lod^kfp j p `^k fkdbpq qebpb pr_pq^k`bp ^ka fkqolar`b qeb j fkql qeb clla t b_ %Irl j ^ ^ka lqebop) .652 ?ol t k ^ka Irl j ^) .662 Irl j ^) .663&+ I^odb qfa^i*fkar`ba sbil`fqfbp ^ka tfka t^sbp fk pe^iil t t^qbo ^ob `^m^_ib lc obprpmbkafkd _lqql j pbaf j bkqp %Ml t bii ^ka lqebop) .656 P`elbiie^ j bo) .663&+

Qeb qo^kpmloq ^ka c^qb lc prpmbkaba pbaf j bkqp ^ob f j mloq^kq c^`qlop fk abqbo j fkfkd qeb qo^kpmloq ^ka c^qb lc pbaf j bkq*^ppl`f^qba `lkq^ j fk^kqp+ Fk Prfprk ?^v) qeb j ^uf j r j prpmbkaba*pbaf j bkq `lk`bkqo^qflk %PP@& rpr^iiv j ^ohp qeb mlpfqflk lc qeb qro_fafqv j ^uf j r j Æ^ `or`f^i b`lildf`^i wlkb tebob prpmbkaba pbaf j bkqp) krqofbkqp) mevqlmi^khqlk) wllmi^khqlk) i^os^b) ^ka grsbkfib cfpe ^``r j ri^qb %Mbqboplk ^ka lqebop) .642 >oqero ^ka ?^ii) .646 Hf j j bobo) .66/ G^pp_v ^ka Ml t bii) .661 P`elbiie^ j bo ^ka ?ro^r) .665 P`elbiie^ j bo) /--.&+

Prpmbkaba pbaf j bkqp if j fq qeb mbkbqo^qflk lc ifdeq fkql P^k Co^k`fp`l ?^v) t ef`e ^ccb`qp melqlpvkqebpfp ^ka mof j ^ov mevqlpvkqebqf` `^o_lk molar`qflk %@lib ^ka @ilbok) .654 @ilbok) .654) .663&+ Pbaf j bkqp ^ipl abmlpfq fk mloqp ^ka pefmmfkd `e^kkbip) t ef`e qebk obnrfob aobadfkd ql j ^fkq^fk k^sfd^qflk %R+P+ Bksfolk j bkq^i Molqb`qflk >dbk`v) .66/&+ Qeb R+P+ Dblildf`^i Prosbv %RPDP&) fk `llmbo^qflk t fqe qeb @> ICBA ?^v*Abiq^ Moldo^ j ) ^ka qeb R+P+ >o j v @lomp lc Bkdfkbbop) fp pqravfkd qeb c^`qlop qe^q ^ccb`q PP@ fk P^k Co^k`fp`l ?^v+

Mromlpb ^ka P`lmb

Qefp obmloq pr j j ^ofwbp PP@ a^q^ `liib`qba _v qeb RPDP fk P^k Co^k`fp`l ?^v arofkd t^qbo vb^o %TV& /--0 ^ka fp qeb i^qbpq fk ^ pbofbp _^pba lk a^q^ `liib`qba _bdfkkfkd fk TV .66/ %?r`e^k^k ^ka P`elbiie^ j bo) .662) .663) .665) .666 ?r`e^k^k ^ka lqebop) .663 ?r`e^k^k ^ka Orei) /---) /--.8 ^ka ?r`e^k^k ^ka D^kgr) /--/) /--0) /--1&+ @liib`qflk lc PP@ a^q^ fk P^k Co^k`fp`l ?^v obnrfobp absbilm j bkq lc j lkfqlofkd j bqelap ^ka `^if_o^qflk qb`ekfnrbp t ef`e ^ob mobpbkqba fk qefp obmloq+ PP@ tbob j lkfqloba ^q q t l pfqbp fk Prfprk ?^v) qeobb pfqbp fk P^k M^_il ?^v) lkb pfqb fk @bkqo^i P^k Co^k`fp`l ?^v) ^ka qeobb pfqbp fk Plrqe P^k Co^k`fp`l ?^v+ Qebpb a^q^ tbob rpba ql ebim abqbo j fkb qeb c^`qlop qe^q ^ccb`q PP@ fk P^k Co^k`fp`l ?^v %R+P+ Dblildf`^i Prosbv) ^``bppba Griv .1) /--1&+ PP@ a^q^ clo TV .66/ qeolrde /--0 ^ob ^s^fi^_ib col j qeb R+P+ Dblildf`^i Prosbv %^``bppba Griv .2) /--1&+

Pqrav >ob^

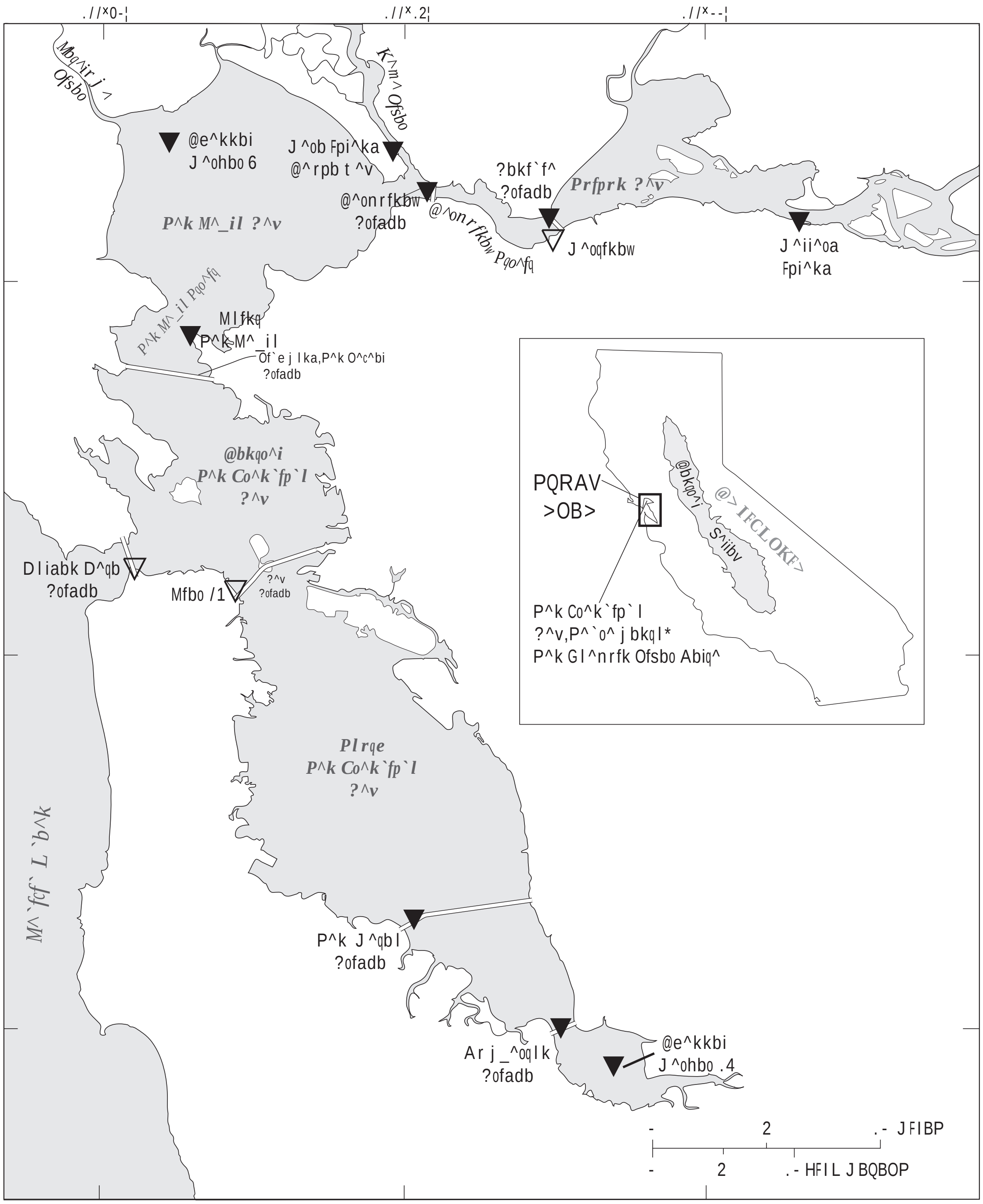
P^k Co^k`fp`l ?^v %cfd+ .& `ljmofpbp pbsbo^i j^glo pr_bj_^vjbkqp8 Prfprk ?^v) P^k M^_il ?^v) @bkqo^i P^k Co^k`fp`l ?^v %@bkqo^i ?^v&) ^ka Plrqe P^k Co^k`fp`l ?^v %Plrqe ?^v&+ Fk P^k Co^k`fp`l ?^v) qfabp ^ob pbjfafrok^i %qtl efde ^ka qtl ilt qfabp mbo a^v& tfqe ^ o^kdb lc ^_lrq 2+2 cbbq %cq& fk Prfprk ?^v) 3+2 cq ^q qeb Dliabk D^qb ^ka @bkqo^i ?^v) ^ka ^_lrq .- cq fk Plrqe ?^v+ Qeb qfabp ^ipl cliilt ^ .1*a^v pmofkd*kb^m `v`ib+ Qvmf`^i qfa^i `roobkqp o^kdb colj -+3 cbbq mbo pb`lka %cq,p& fk pe^iilt t^qbo ql jlob qe^k 0 cq,p fk abbm `e^kkbip %@ebkd ^ka D^oqkbo) .6518 Pjfqe) .654&+ Tfkap qvmf`^iiv ^ob pqolkdbpq fk prjjbo arofkd ^cqbokllk) lkpelob pb^ _obbwbp+ Jlpq mob`fmfq^qflk l``rop colj i^qb ^rqrjk ql b^oiv pmofkd) ^ka cobpe t^qbo afp`e^odb fkql P^k Co^k`fp`l ?^v fp dob^qbpq fk qeb pmofkd arb ql orklcc colj pklt jbiq+ >_lrq 6- mbo`bkq lc qeb afp`e^odb fkql qeb ?^v fp colj qeb P^`o^jbkql*P^k Gl^nrfk Ofsbo Abiq^) tef`e ao^fkp qeb @bkqo^i S^iibv lc @^ifclokf^ %Pjfqe) .654&+

Qvmf`^iiv) afp`e^odb colj qeb Abiq^ `lkq^fkp lsbo 3- mbo`bkq lc qeb cirsf^i pbafjbkqp qe^q bkqbo qeb ?^v %J`Hbb ^ka lqebop) /--/&) qelrde qefp mbo`bkq^db s^ofbp colj vb^o ql vb^o+ Arofkd tbq tfkqbop) qro_fa mirjbp lc t^qbo colj qeb Abiq^ e^sb buqbkaba fkql Plrqe ?^v %@^oiplk ^ka J`@riil`e) .641&+ Qeb _lqqlj pbafjbkqp fk Plrqe ?^v ^ka fk qeb pe^iilt t^qbo ^ob^p %^_lrq ./ cq lo ibpp& lc @bkqo^i) P^k M^_il) ^ka Prfprk ?^vp ^ob `ljmlpba jlpqiv lc pfiqp ^ka `i^vp+ Pfiqp ^ka p^kap ^ob mobpbkq fk qeb abbmbo m^oqp lc @bkqo^i) P^k M^_il) ^ka Prfprk ?^vp ^ka fk @^onrfkbw Pqo^fq %@lkljlp ^ka Mbqboplk) .644&+

>`hkltibadjbkqp

Qeb ^rqelop do^qbcriiv ^`hkltibadb qeb R+P+ @l^pq Dr^oa %RP@D&) @^ifclokf^ Abm^oqjbkq lc Qo^kpmloq^qflk) @^ifclokf^ Abm^oqjbkq lc T^qbo Obplro`bp %ATO&) B>F Fkqbok^qflk^i) ^ka qeb @fqv lc S^iibgl clo qebfo mbojfppflk ^ka ^ppfpq^k`b fk bpq^_ifpefkd qeb jlkfqlofkd pfqbp rpba fk qefp pqrav+

Qeb @>ICBA ?^v,Abiq^ Moldo^j) RPDP Moflofqv B`lpvpqbj P`fbk`b Moldo^j) ^ka qeb R+P+ >ojv @lomp lc Bkdfkbbop) ^p m^oq lc qeb P^k Co^k`fp`l Bpqr^ov Obdflk^i Jlkfqlofkd Moldo^j clo Qo^`b Pr_pq^k`bp) prmmloqba `liib`qflk lc qebpb a^q^+



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▽ Afp`lkqfkrba jlkfqlofkd pfqb

Cfdrob .+ P^k Co^k`fp`l ?^v pqrav ^ob^) @^ifclokf^+

Jbqelap

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Qeobb afccbobkq qvmbp lc lmqf`^i pbkplop tbob rpba ql jlkfqlo PP@ arofkd TV /--0+ Qeb cfopq qvmb lc pbkplo fp j^krc^`qroba _v A # > Fkpqorjbkq @ljm^kv ^ka fp ^ `vifkabo ^mmolufj^qbiv 4 fk`ebp %fk+& ilkd ^ka . fk+ fk af^jbqbo tfqe ^k lmqf`^i tfkalt ^q lkb bka) ^ `^_ib `lkkb`qflk ^q qeb lqebo bka) ^ka ^k bk`^pba `fo`rfq _l^oa+ > efde*fkqbkpfqv fkco^oba bjfqqfkd aflab molar`bp ^ _b^j qeolrde qeb lmqf`^i tfkalt qe^q fp p`^qqboba) lo obcib`qba) _v m^oqf`ibp qe^q ^ob ^_lrq -+/¬./ fk+ fk colkq lc qeb tfkalt+ > abqb`qlo %clro melqlaflabp& ob`bfsbp _^`hp`^qqbo colj ^ cfbia lc .1-¬.32 abdobbp tef`e fp `lksboqba ql ^ sliq^db lrqmrq ^ka ob`loaba lk ^ pbm^o^qb a^q^ ilddbo+ Qeb pb`lka qvmb lc pbkplo) j^krc^`qroba _v ?QD) fp pbic*`ib^kfkd ^ka afccbop colj qeb A # > Fkpqorjbkq @ljm^kv pbkplo fk qe^q fq jb^probp qeb fkqbkpfqv lc ifdeq p`^qqboba ^q 6- abdobbp _bqtbbk ^ ifdeq*bjfqqfkd aflab ^ka ^ efde*pbkpfqfsfqv melqlaflab abqb`qlo+ Qeb ?QD pbkplo e^p ^ pbm^o^qb bib`qolkf` rkfq qe^q pbqp qeb obplirqflk ^ka j^ufjrj ob^afkd) bumobppba fk kbmebiljbqof` qro_fafqv rkfqp %KQR&+ Qeb lrqmrq colj qeb bib`qolkf` rkfq fp ob`loaba lk ^ pbm^o^qb a^q^ ilddbo+ Qeb qefoa qvmb lc pbkplo) sbopflkp lc tef`e ^ob rpba _v _lqe Evaoli^_ ^ka VPF fkpqorjbkqp) jb^probp qeb fkqbkpfqv lc ifdeq p`^qqboba ^q 6- abdobbp _bqtbbk ^ ifdeq*bjfqqfkd aflab ^ka ^ efde*pbkpfqfsfqv melqlaflab abqb`qlo) ^ka qeb lrqmrq fp mol`bppba _v fkqbok^i plcqt^ob ql ob^a fk KQR+ Qeb Evaoli^_ ^ka VPF fkpqorjbkqp ^ob pbic*`lkq^fkba) fk`irafkd ^ mltbo plro`b ^ka a^q^ ilddbo+

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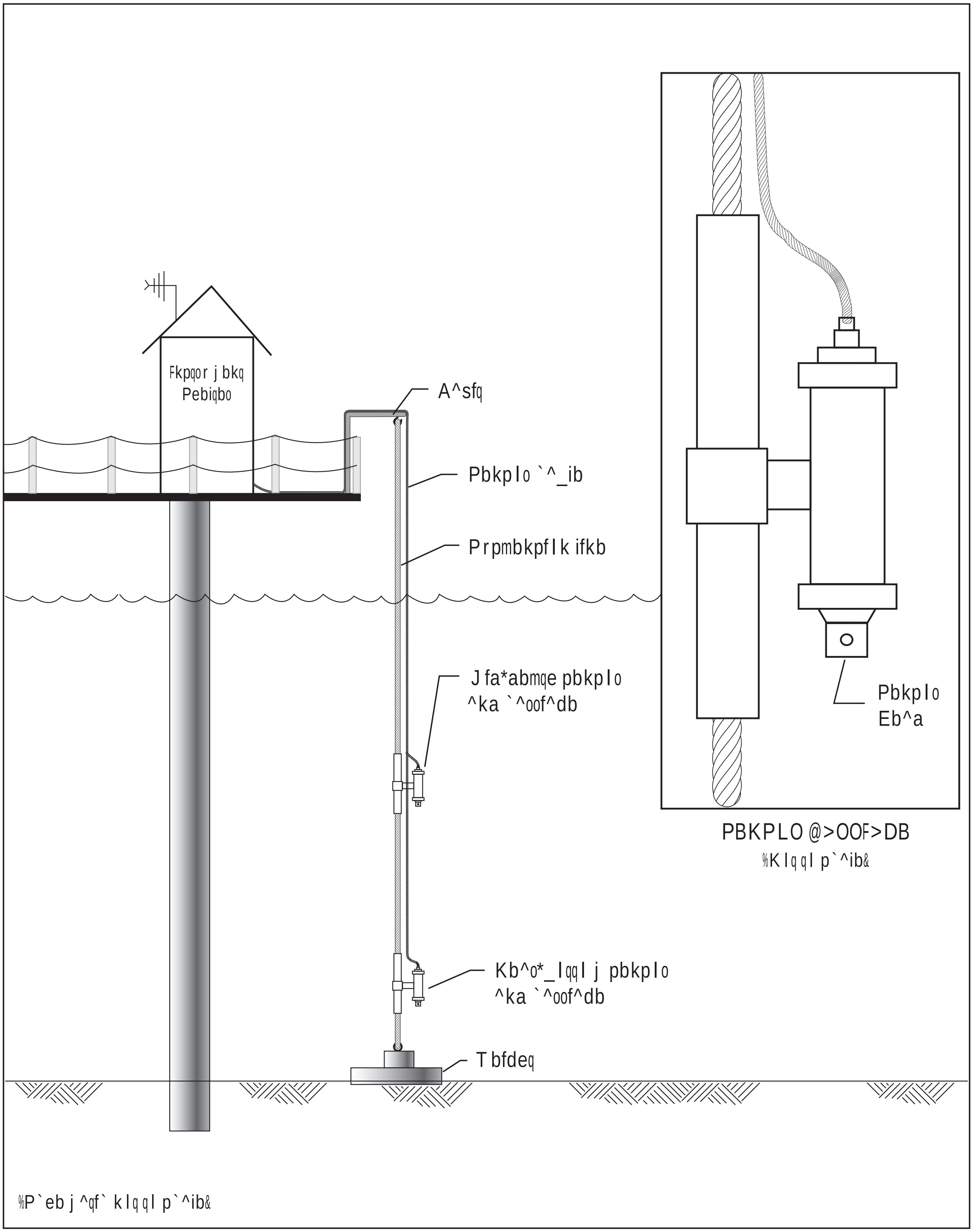

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XClo abcfkfqflk lc J I I T) pbb @lksbopflk C^`qlop) A^qr j ) >__obsf^qflkp) ^ka >`olkv j p bkqov ^q colkq lc qefp obmloqZ

Pfqb	Pq^qflk Kl+	I^qfqrab	Ilkdfqrab	Pbkplo abmqe	Abmqe _bil t J I I T	T^qbo abmqe ^q J I I T
J^ii^oa Fpi^ka	...52.52	05Õ-/$01´	./.Õ22$-6´	Kb^o*proc^`b Kb^o*_lqql j	0+0· /-	/2
?bkf`f^ ?ofadb	..12245-	05Õ-/$1/´	.//Õ-4$0/´	Kb^o*proc^`b Kb^o*_lqql j	3 22	5-
@^onrfkbw ?ofadb	..1225/-	05Õ-0$1.´	.//Õ.0$/0´	J fa*abmqe Kb^o*_lqql j	1- 50	55
J^ob Fpi^ka @^rpbt^v	..12504-	05Õ-3$1-´	.//Õ.3$/2´	J fa*abmqe Kb^o*_lqql j	.2 /2	0-
@e^kkbi J^ohbo 6	05-2.6.///3/6-.	05Õ-2$.6´	.//Õ/3$/6´	Kb^o*_lqql j	1	3
Mlfkq P^k M^_il	...5.03-	04Õ24$20´	.//Õ/2$1/´	J fa*abmqe Kb^o*_lqql j	.0 /0	/3
P^k J^qbl ?ofadb	...3/432	04Õ02$-1´	.//Õ.1$26´	J fa*abmqe Kb^o*_lqql j	.6 1-	15
Ar j _^oqlk ?ofadb	040-.2.//-4.---	04Õ0-$.2´	.//Õ-4$.-´	J fa*abmqe Kb^o*_lqql j	// 1.	12
@e^kkbi J^ohbo .4	04/511.//-105--	04Õ/5$11´	.//Õ-1$05´	J fa*abmqe Kb^o*_lqql j	./ //	/2

·Abmqe _bil t t^qbo proc^`b+

J lkfqlofkd Pfqbp

Prfprk ?^v Fkpq^ii^qflkp

PP@ a^q^ tbob `liib`qba fk Prfprk ?^v ^q J^ii^oa Fpi^ka ^ka ?bkf`f^ ?ofadb %cfd+ .) q^_ib .&+ Lmqf`^i pbkplop tbob fkpq^iiba ^q qeb ATO J^ii^oa Fpi^ka @lj mif^k`b J lkfqlofkd Pq^qflk lk Cb_or^ov 5) .661+ Lmqf`^i pbkplop tbob mlpfqflkba ql `lfk`fab tfqe ATO kb^o*_lqql j bib`qof`^i `lkar`q^k`b ^ka qbj mbo^qrob pbkplop ^ka kb^o*proc^`b mrj m fkq^hb+ Qeb mrj m fkq^hb fp ^qq^`eba ql ^ cil^q ^ka ao^tp t^qbo col j ^_lrq 0 cq _bil t qeb proc^`b+ Qeb kb^o*proc^`b lmqf`^i pbkplo fp ^qq^`eba ql ^ pbm^o^qb cil^q ^ka mlpfqflkba ^q qeb p^j b abmqe ^p qeb mrj m fkq^hb+

Lmqf`^i pbkplop tbob abmilvba lcc lc Mfbo 4 lk qeb ?bkf`f^ ?ofadb lk J^o`e .2) .663+ Qeb ?bkf`f^ ?ofadb pfqb t^p perq al tk fk TV .665 clo pbfpj f` obqolcfqqfkd lc qeb _ofadb ^ka t^p obbpq^_ifpeba tfqe plkabp bnrfmba tfqe lmqf`^i) `lkar`q^k`b) ^ka qbj mbo^qrob pbkplop lk J^v .) /--.+ > j lkfqlofkd pfqb ^q qeb J^oqfkbw J^ofk^ cfpefkd mfbo t^p afp`lkqfkrba fk TV .663 _b`^rpb a^q^ col j qeb ?bkf`f^ ?ofadb pfqb tbob `lkpfaboba j lob obmobpbkq^qfsb lc PP@ fk qeb @^onrfkbw Pqo^fq ^ob^ lc Prfprk ?^v %?r`e^k^k ^ka P`elbiie^ j bo) .665&+

P^k M^_il ?^v Fkpq^ii^qflkp

PP@ a^q^ tbob `liib`qba fk @^onrfkbw Pqo^fq ^q @^onrfkbw ?ofadb) K^m^ Ofsbo ^q J^ob Fpi^ka @^rpbt^v) ^ka P^k M^_il ?^v ^q @e^kkbi J^ohbo 6 %cfd+ .) q^_ib .&+ Plkabp tfqe lmqf`^i) `lkar`q^k`b) ^ka qbj mbo^qrob pbkplop tbob abmilvba lcc qeb `bkqbo mfbo pqor`qrob ^q @^onrfkbw ?ofadb lk >mofi /.) .665+ Lmqf`^i pbkplop tbob abmilvba lcc ^ `^qt^ih _bkb^qe J^ob Fpi^ka @^rpbt^v lk L`ql_bo .) .665+ > plkab tfqe lmqf`^i) `lkar`q^k`b) ^ka qbj mbo^qrob pbkplop t^p abmilvba lcc lc RP@D @e^kkbi J^ohbo 6 lk Klsbj _bo ./) .665+

@bkqo^i P^k Co^k`fp`l ?^v Fkpq^ii^qflkp

PP@ a^q^ tbob `liib`qba fk P^k M^_il Pqo^fq ^q Mlfkq P^k M^_il %cfd+.) q^_ib .&+ Lmqf`^i pbkplop tbob abmilvba ^q P^k M^_il Pqo^fq lk qeb kloqebok bka lc qeb Of`ej lka Qbo j fk^i kl+ 1 mfbo lk qeb tbpqbok pfab lc Mlfkq P^k M^_il lk Ab`bj _bo .) .66/+ Qeb pq^qflk ^q Mlfkq P^k M^_il t^p perq al tk lk G^kr^ov /) /--.) ^ka obbpq^_ifpeba lk Ab`bj _bo ..) /--.) lcc ^ mfbo*^ag^`bkq pqor`qrob ^mmoluf j ^qbiv /2 cq col j qeb mobsflrp abmilv j bkq pfqb+ > j lkfqlofkd pq^qflk ^q P^k Co^k`fp`l ?^v ^q Mfbo /1 t^p afp`lkqfkrba lk G^kr^ov 0) /--/+ Qeb RPDP ^ppr j ba lmbo^qflk lc qebpb pq^qflkp col j ATO fk L`ql_bo .656 %`liib`qflk lc `lkar`qfsfqv ^ka qbj mbo^qrob a^q^ t^p `llmbo^qfsbiv crkaba _v ATO ^ka qeb RPDP&+ > j lkfqlofkd pq^qflk ^q qeb plrqe ql tbo lc qeb Dliabk D^qb ?ofadb t^p lmbo^qflk^i arofkd t^qbo vb^op .663 ^ka .664+ @lkar`qfsfqv ^ka qbj mbo^qrob a^q^ `liib`qba ^q Mlfkq P^k M^_il ^ka Mfbo /1 moflo ql L`ql_bo .) .656) `^k _b l_q^fkba col j ATO+

Plrqe P^k Co^k`fp`l ?^v Fkpq^ii^qflkp

PP@ a^q^ tbob `liib`qba fk Plrqe P^k Co^k`fp`l ?^v ^q P^k J^qbl ?ofadb) Ar j _^oqlk ?ofadb) ^ka RP@D @e^kkbi J^ohbo .4 %cfd+ .) q^_ib .&+ Lmqf`^i pbkplop tbob abmilvba lcc lc Mfbo /- lk qeb P^k J^qbl ?ofadb) lk qeb b^pq pfab lc qeb pefm `e^kkbi) lk Ab`bj _bo /0) .66.+ Fk ^aafqflk ql PP@) pmb`fcf` `lkar`q^k`b ^ka qbj mbo^qrob %`llmbo^qfsbiv crkaba _v ATO ^ka qeb RPDP& tbob j lkfqloba ^q kb^o*_lqql j ^ka kb^o*proc^`b abmqep ^q P^k J^qbl ?ofadb+ Qeb RPDP ^ppr j ba lmbo^qflk lc qefp pq^qflk col j ATO fk L`ql_bo .656+ @lkar`qfsfqv ^ka qbj mbo^qrob a^q^ `liib`qba ^q P^k J^qbl ?ofadb moflo ql L`ql_bo .) .656) `^k _b l_q^fkba col j ATO+ Lmqf`^i pbkplop tbob abmilvba lcc lc Mfbo /0 lk qeb Ar j _^oqlk ?ofadb lk qeb tbpq pfab lc qeb pefm `e^kkbi lk L`ql_bo /.) .66/+ Lmqf`^i pbkplop tbob abmilvba ^q RP@D @e^kkbi J^ohbo .4 lk Cb_or^ov /3) .66/+

T^qbo*P^j mib @liib`qflk

T^qbo p^j mibp) rpba ql `^if_o^qb qeb sliq^db lrqmrq lc qeb lmqf`^i pbkplop ql PP@) tbob `liib`qba rpfkd ^ elofwlkq^iiv mlpfqflkba j lafcfba S^k Alok p^j mibo _bclob ^ka ^cqbo qeb pbkplop tbob `ib^kba+ Qeb S^k Alok p^j mibo fp ^ mi^pqf` qr_b tfqe or__bo pqlmmbop ^q b^`e bka qe^q pk^m perq tebk qofddboba _v ^ p j ^ii tbfdeq aolmmba al tk ^ prpmbkpflk `^_ib+ Qeb S^k Alok p^j mibo t^p il tboba ql qeb abmqe lc qeb pbkplo _v ^ obbi ^ka `o^kb ^ppbj _iv ^ka qofddboba tefib qeb pbkplo t^p `liib`qfkd a^q^+ >cqbo `liib`qflk) qeb t^qbo p^j mib t^p j ^ohba clo fabkqfcf`^qflk ^ka mi^`ba fk ^ `lkq^fkbo clo qo^kpmloq+ Qeb PP@ lc t^qbo p^j mibp `liib`qba tfqe ^ j lafcfba S^k Alok p^j mibo ^ka ^ M*4/ mlfkq p^j mibo) rpba rkqfi TV .661) tbob sfoqr^iiv fabkqf`^i %?r`e^k^k ^ka lqebop) .663&+

P^ j mibp t bob pbkq ql qeb RPDP Pbaf j bkq I ^_lo^qlov fk J ^ofk^) @^ifclokf^) clo ^k^ivpfp lc PP@+ Prpmbkaba pbaf j bkq fk`irabp ^ii m^oqf`ibp fk qeb p^ j mib qe^q al klq m^pp qeolrde ^ -+12* j f`ol j bqbo j b j _o^kb cfiqbo+ Prpmbkaba*pbaf j bkq `lk`bkqo^qflkp t bob obcbooba ql ^p prpmbkaba*plifap `lk`bkqo^qflk fk mobsflrp obmloqp %?r`e^k^k ^ka P`elbiie^ j bo) .662) .663) .665) .6668 ?r`e^k^k ^ka lqebop) .6638 ^ka ?r`e^k^k ^ka Orei) /---) /--.&+ Qeb ^k^ivqf`^i j bqela rpba ql nr^kqfcv `lk`bkqo^qflkp lc prpmbkaba plifa*me^pb j ^qbof^i afa klq `e^kdb _rq qeb kl j bk`i^qrob rpba ql abp`of_b pbaf j bkq a^q^ afa `e^kdb %Do^v ^ka lqebop) /---&+ T^qbo p^ j mibp `liib`qba clo qefp pqrav t bob ^k^ivwba clo prpmbkaba*pbaf j bkq `lk`bkqo^qflk _v cfiqbofkd p^ j mibp qeolrde ^ mobqo^oba -+12* j f`ol j bqbo j b j _o^kb cfiqbo+ Qeb cfiqo^qb t ^p ofkpba t fqe ab*flkfwba t ^qbo ql ob j lsb p^iqp) ^ka qeb fkplir_ib j ^qbof^i ^ka cfiqbo t bob aofba ^q .-0Ô@ ^ka t bfdeba %Cfpe j ^k ^ka Cofba j ^k) .656&+

A^q^ Mol`bppfkd

A^q^ ilddbop pqloba qeb sliq^db lrqmrqp col j qeb lmqf`^i pbkplop ^q .2* j fkrqb fkqbos^ip %63 a^q^ mlfkqp mbo a^v&+ Ob`loaba a^q^ t bob al t kil^aba col j qeb a^q^ ilddbop lkql bfqebo ^ pqlo^db j laria lo i^mqlm `l j mrqbo arofkd pfqb sfpfqp+ O^ t a^q^ col j qeb pqlo^db j laribp lo i^mqlm `l j mrqbo t bob il^aba fkql qeb RPDP ^rql j ^qba a^q^*mol`bppfkd pvpqb j %>A>MP&+

Qeb qf j b*pbofbp a^q^ t bob obqofbsba col j >A>MP ^ka bafqba rpfkd J >QI >? plcqt ^ob ql ob j lsb fks^ifa a^q^+ Fks^ifa a^q^ fk`iraba o^mfaiv fk`ob^pfkd sliq^db lrqmrqp ^ka rkrpr^iiv efde sliq^db lrqmrqp lc peloq aro^qflk+ >p _flildf`^i dol t qe ^``r j ri^qba lk qeb lmqf`^i pbkplop) qeb sliq^db lrqmrq lc qeb pbkplop fk`ob^pba %bu`bmq clo qeb Evaoli^_$p lmqf`^i pbkplo lrq*mrq) t ef`e ab`ob^pba&+ >k bu^ j mib qf j b pbofbp lc o^ t ^ka bafqba lmqf`^i pbkplo a^q^ fp mobpbkqba fk cfdrob 0+ >cqbo pbkplop t bob `ib^kba) pbkplo lrqmrq f j j baf^qbiv ab`ob^pba %cfd+ 0>7 J ^v 3) 0-) Grkb .4) ^ka Griv 5&+ Bccloqp ql `loob`q clo _flclrifkd molsba ql _b rkpr``bppcri _b`^rpb qeb pfdk^i lcqbk t ^p efdeiv s^of^_ib+ Qerp) a^q^ ^ccb`qba _v _flclrifkd lcqbk t bob rkrp^_ib ^ka t bob ob j lsba col j qeb ob`loa %cfd+ 0?&+ Fabkqfcvfkd qeb mlfkq ^q t ef`e clrifkd _bdfkp ql ^ccb`q lmqf`^i pbkplo a^q^ fp pl j b* t e^q pr_gb`qfsb+ Fkaf`^qlop ^ob rpba ql ebim abcfkb qeb mlfkq ^q t ef`e clrifkd _bdfkp ql q^hb mi^`b pr`e ^p ^k bibs^qba _^pbifkb) fk`ob^pfkdiv s^of^_ib pfdk^i) ^ka `l j m^ofplkp t fqe qeb lqebo pbkplo ^q qeb pfqb+ Pmfhbp fk qeb a^q^) t ef`e ^ob ^kl j ^ilrpiv efde sliq^dbp mol_^_iv `^rpba _v ab_ofp qb j mlo^ofiv t o^mmba ^olrka qeb pbkplo lo _v i^odb j ^ofkb lod^kfp j p %cfpe) `o^_p& lk lo kb^o qeb pbkplo) ^ipl t bob ob j lsba col j qeb o^ t a^q^ ob`loa %cfd+ 0?&+ Pl j bqf j bp) fk`l j mibqb `ib^kfkd lc ^ pbkplo t lria `^rpb ^ p j ^ii) `lkpq^kq pefcq fk pbkplo lrqmrq qe^q `lria _b `loob`qba rpfkd t ^qbo*p^ j mib a^q^+

Pbkplo @^if_o^qflk ^ka Prpmbkaba*Pbaf j bkq @lk`bkqo^qflk A^q^

Qeb lrqmrq clo qeb qeobb qvmbp lc pbkplop rpba clo qefp pqrav ^ob molmloqflk^i ql qeb PP@ fk qeb t ^qbo `lir j k ^q qeb abmqe lc qeb pbkplo+ PP@ `^i`ri^qba col j qeb lrqmrq lc pfab*_v*pfab pbkplop t fqe afccbobkq fkpqor j bkq abpfdkp %?QD ^ka A # > Fkpqor j bkq @l j m^kv& t bob sfoqr^iiv fabkqf`^i %?r`e^k^k ^ka P`elbiie^ j bo) .665&+ @^if_o^qflk lc qeb pbkplo lrqmrq ql PP@ t fii s^ov ^``loafkd ql qeb pfwb ^ka lmqf`^i molmboqfbp lc qeb prpmbkaba pbaf j bkq8 qebobclob) qeb pbkplop j rpq _b `^if_o^qba rpfkd prpmbkaba j ^qbof^i col j qeb cfbia %I bsbpnrb ^ka P`elbiie^ j bo) .662&+

Qeb lrqmrq col j qeb lmqf`^i pbkplop t ^p `lksboqba ql PP@ _v ifkb^o obdobppflk rpfkd qeb ol_rpq) klkm^o^ j bqof`) obmb^qba j baf^k j bqela %Pfbdbi) .65/&+ Fk ^aafqflk) qeb mobaf`qflk fkqbos^i ^ka qeb 62*mbo`bkq `lkcfabk`b fkqbos^i t bob `^i`ri^qba ^ka mobpbkqba clo b^`e `^if_o^qflk bnr^qflk+

Qeb obmb^qba j baf^k j bqela `^i`ri^qbp qeb pilmb fk ^ q t l*m^oq mol`bpp+ Cfopq) clo b^`e mlfkq %U)V&) qeb j baf^k lc ^ii mlppf_ib ¦mlfkq f´ ql ¦mlfkq g´ pilmbp t ^p `^i`ri^qba

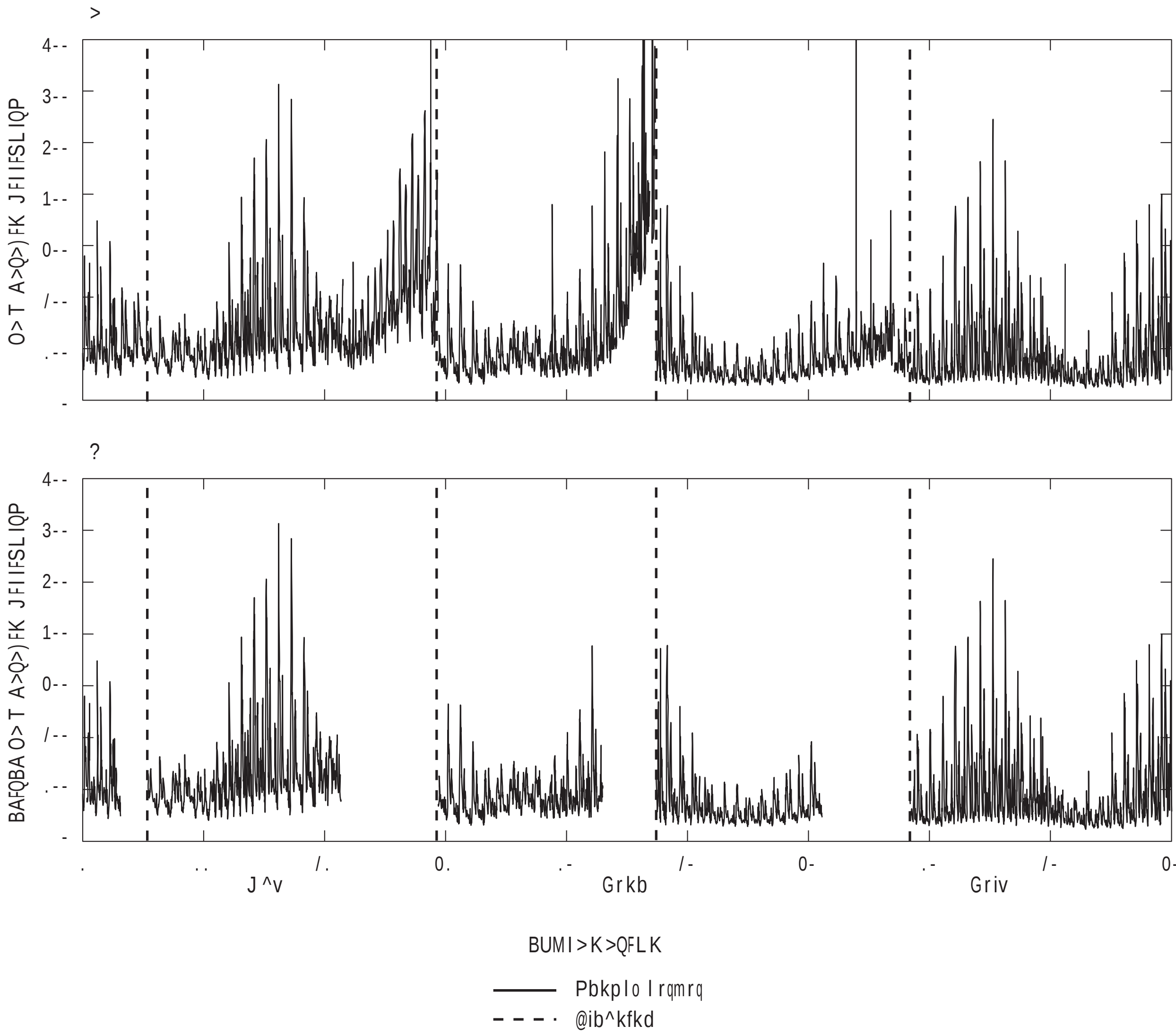
$$\delta_f : \text{ j baf\^k } \frac{+V_g \neg V_f,}{+U_g \neg U_f,} \text{ clo \^ii } g \notin f \quad \%.\&$$

Qeb `^if_o^qflk pilmb t ^p `^i`ri^qba ^p qeb j baf^k lc f

$$\text{pilmb} : \delta_. : \text{ j baf\^k} +\delta_f, \quad \%/\&$$

Cfk^iiv) qeb `^if_o^qflk fkqbo`bmq t ^p `^i`ri^qba ^p qeb j baf^k lc ^ii mlppf_ib fkqbo`bmqp rpfkd qeb pilmb `^i`ri^qba ^_lsb

$$\text{fkqbo`bmq} : \delta_- : \text{ j baf\^k} +V_f \neg \delta_. U_f, \quad \%0\&$$



Cfdrob 0+ Bu^jmib lc %>& o^t ^ka %?& bafqba lmqf`^i a^q^) kb^o*_lqqlj pbkplo) J^ob Fpi^ka @^rpbt^v) P^k M^_il ?^v) @^ifclokf^) t^qbo vb^o /--0+

Qeb cfk^i ifkb^o `^if_o^qflk bnr^qflk fp

V : &U (&- %1&

Qeb klkm^o^ j bqof` mobaf`qflk fkqbos^i %MF km& %Ebipbi ^ka Efop`e) .66/) m+ 43& fp ^ `lkpq^kq* t faqe boolo _^ka qe^q `lkq^fkp ^_lrq 35 mbo`bkq) lo lkb pq^ka^oa absf^qflk) lc qeb `^if_o^qflk a^q^ pbq+ Qeb 35*mbo`bkq s^irb t ^p pbib`qba _b`^rpb bppbkqf^iiv fq e^p qeb p^ j b boolo mobaf`qflk if j fqp ^p qeb ol lq* j b^k*pnr^oba %O J P& boolo lc mobaf`qflk fk loafk^ov ib^pq pnr^oba obdobppflk8 qeb i^qqbo t ^p rpba fk mobsflrp a^q^ obmloqp %?r`e^k^k ^ka P`elbiie^ j bo) .662) .663) .665) .6668 ?r`e^k^k ^ka lqebop) .663& ql ^k^ivwb o^kal j pbqp lc klo j ^iiv afpqof_rqba a^q^+ Qeb mobaf`qflk fkqbos^i abp`of_bp qeb ifhbifellla qe^q ^ kbt l_pbos^qflk `l j bp col j qeb p^ j b afpqof_rqflk ^p qeb mobsflrpiv `liib`qba a^q^ pbq+

Qeb MF km) rkifhb qeb O J P boolo lc mobaf`qflk) cobnrbkqiv fp klq pv j j bqof`^i ^_lrq qeb obdobppflk ifkb+ Clo bu^ j mib) qeb MFk m j ^v _b obmloqba ^p (.- j fiifdo^ j p mbo ifqbo % j d,I& ^ka Ô4 j d,I+ Qefp ^pv j j bqov ^_lrq qeb obdobppflk ifkb fp ^ obpriq lc qeb afpqof_rqflk lc qeb a^q^ pbq+ Qeb MF km fp `^i`ri^qba _v `l j mrqfkd ^ka ploqfkd) col j ib^pq ql dob^qbpq) qeb obpfar^ip clo b^`e mlfkq+ Qebk) _^pba lk qeb ploqba ifpq lc obpfar^ip7

klkm^o^ j bqof` mobaf`qflk fkqbos^i : MF km : V|Or|+k(., ql V|.¬Oi|+k(., %2&

t ebob

V fp qeb obpfar^i s^irb)
k fp qeb kr j _bo lc a^q^ mlfkqp) ^ka
γ fp qeb `lkcfabk`b ibsbi lc -+35+

Ql `^i`ri^qb qeb `lkcfabk`b fkqbos^i) ^ii mlppf_ib mlfkq*ql*mlfkq pilmbp j rpq _b ploqba fk ^p`bkafkd loabo+ ?^pba lk qeb `lkcfabk`b fkqbos^i abpfoba) 62*mbo`bkq clo qeb mromlpbp lc qefp obmloq) qeb o^khp lc qeb rmmbo ^ka il t bo _lrkap ^ob `^i`ri^qba ^p cliil t p7

Or : [(k+k¬.)/ (.+63 √(k+k¬.)+/k(2 / .5)] / (.) ^ka %3&

Oi : [(k+k¬.)/ ¬ .+63 √(k+k¬.)+/k(2 / .5)] / %4&

t ebob

Or fp qeb o^kh lc qeb rmmbo _lrka pilmb)
Oi fp qeb o^kh lc qeb il t bo _lrka pilmb) ^ka
k fp qeb kr j _bo lc p^ j mibp+

Ql bpq^_ifpe qeb 62*mbo`bkq `lkcfabk`b fkqbos^i) qeb o^khp `^i`ri^qba ^_lsb ^ob olrkaba ql qeb kb^obpq fkqbdbo ^ka qeb pilmb ^ppl`f^qba t fqe b^`e o^kh fk qeb ploqba ifpq fp fabkqfcfba+ Qefp fp ^ i^odb*p^ j mib ^mmoluf j ^qflk ^ka t ^p rpba clo b^`e lc qeb `lkcfabk`b fkqbos^ip mobpbkqba fk qefp obmloq+ El t bsbo) fk qeb bsbkq qe^q cb t bo qe^k .- p^ j mibp e^a _bbk `liib`qba) ^ afob`q `^i`ri^qflk `lria _b mbocloj ba rpfkd qeb j bqelalildv mobpbkqba fk Ebipbi ^ka Efop`e %.66/) m+ /40¬/41&+

> pq^qfpqf`^i pr j j ^ov lc qeb PP@) `^i`ri^qba col j lmqf`^i pbkplo a^q^) fp mobpbkqba fk q^_ib /+ Qeb rp^_ib mbo`bkq^db lc ^ `l j mibqb vb^o lc s^ifa a^q^ %63 a^q^ mlfkqp mbo a^v Δ 032 a^vp& clo b^`e pfqb fp mobpbkqba fk q^_ib /+

Qefp pb`qflk lc qeb obmloq ^ipl fk`irabp qeb ol_rpq obdobppflk %`^if_o^qflk& cfdrobp clo lmqf`^i pbkplo lrqmrq sbopRp PP@ %fk j fiifdo^ j p mbo ifqbo&+ Qeb `^if_o^qflk cfdrobp fk`irab qeb kr j _bo lc t ^qbo p^ j mibp %^ii t ^qbo p^ j mibp rpba ql absbilm `^if*_o^qflk) fk`irafkd qelpb col j mobsflrp t ^qbo vb^op&) qeb `^i`ri^qba ifkb^o `loobi^qflk bnr^qflk) qeb klkm^o^ j bqof` mobaf`qflk fkqbos^i %pel t k lk qeb `^if_o^qflk cfdrobp ^p ^ dobv _^ka&) ^ka qeb 62*mbo`bkq `lkcfabk`b fkqbos^i %pel t k lk qeb `^if_o^qflk cfdrobp ^p ^ a^pe*alq ifkb&+ Fk ^aafqflk) qeb qf j b*pbofbp milqp lc `^i`ri^qba PP@ a^q^ ^ob pel t k clo b^`e pfqb+

Q^_ib /+ Pq^qfpqf`^i pr j j ^ov lc `^i`ri^qba prpmbkaba*pbaf j bkq `lk`bkqo^qflk a^q^ ^ka rp^_ib mbo`bkq^db lc ^ `l j mibqb vb^o lc s^ifa a^q^ %63 a^q^ mlfkqp mbo a^v u 032 a^vp& `liib`qba rpfkd lmqf`^i pbkplop) Prfprk ?^v) P^k M^_il ?^v) ^ka @bkqo^i ^ka Plrqe P^k Co^k*`fp`l ?^vp) @^ifclokf^) t^qbo vb^o /--0

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Pfqb	Abmqe	J b^k	J baf^k	Il t bo nr^oqfib	Rmmbo nr^oqfib	Mbo`bkq s^ifa a^q^
J ^ii^oa Fpi^ka	Kb^o*proc^`b	05	00	/5	1/	23
	Kb^o*_lqql j	15	1.	0.	23	25
?bkf`f^ ?ofadb	Kb^o*proc^`b	1-	/6	.4	2/	3-
	Kb^o*_lqql j	53	41	13	../	3.
@^onrfkbw ?ofadb	J fa*abmqe	0.	/.	.0	05	53
	Kb^o*_lqql j	5.	26	/6	.-4	3/
J ^ob Fpi^ka @^rpb t ^v	J fa*abmqe	4-	20	/6	56	26
	Kb^o*_lqql j	..1	53	2/	.14	4.
@e^kkbi J ^ohbo 6	Kb^o*_lqql j	.0/	30	0/	.3-	40
Mlfkq P^k M^_il	J fa*abmqe	/4	/-	.1	0.	1-
	Kb^o*_lqql j	3/	11	0-	41	2/
P^k J ^qbl ?ofadb	J fa*abmqe	11	03	/4	2-	/3
	Kb^o*_lqql j	2.	1-	/5	3/	0.
Ar j _^oqlk ?ofadb	J fa*abmqe	23	12	0.	31	00
	Kb^o*_lqql j	43	26	03	6.	14
@e^kkbi J ^ohbo .4	J fa*abmqe	4/	20	/6	6.	0/
	Kb^o*_lqql j	50	22	0.	.-/	0/

Prfprk ?^v

J ^ii^oa Fpi^ka

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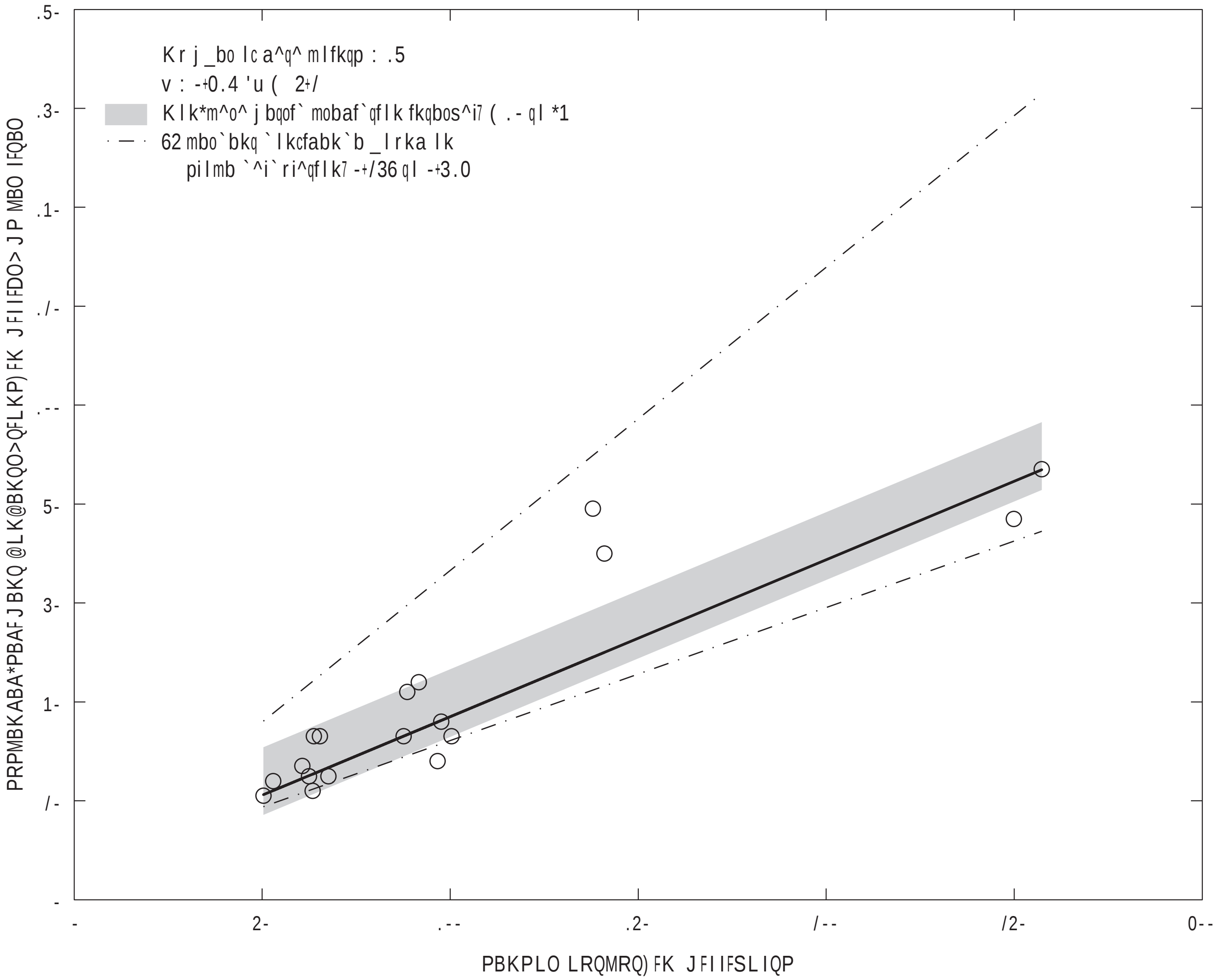

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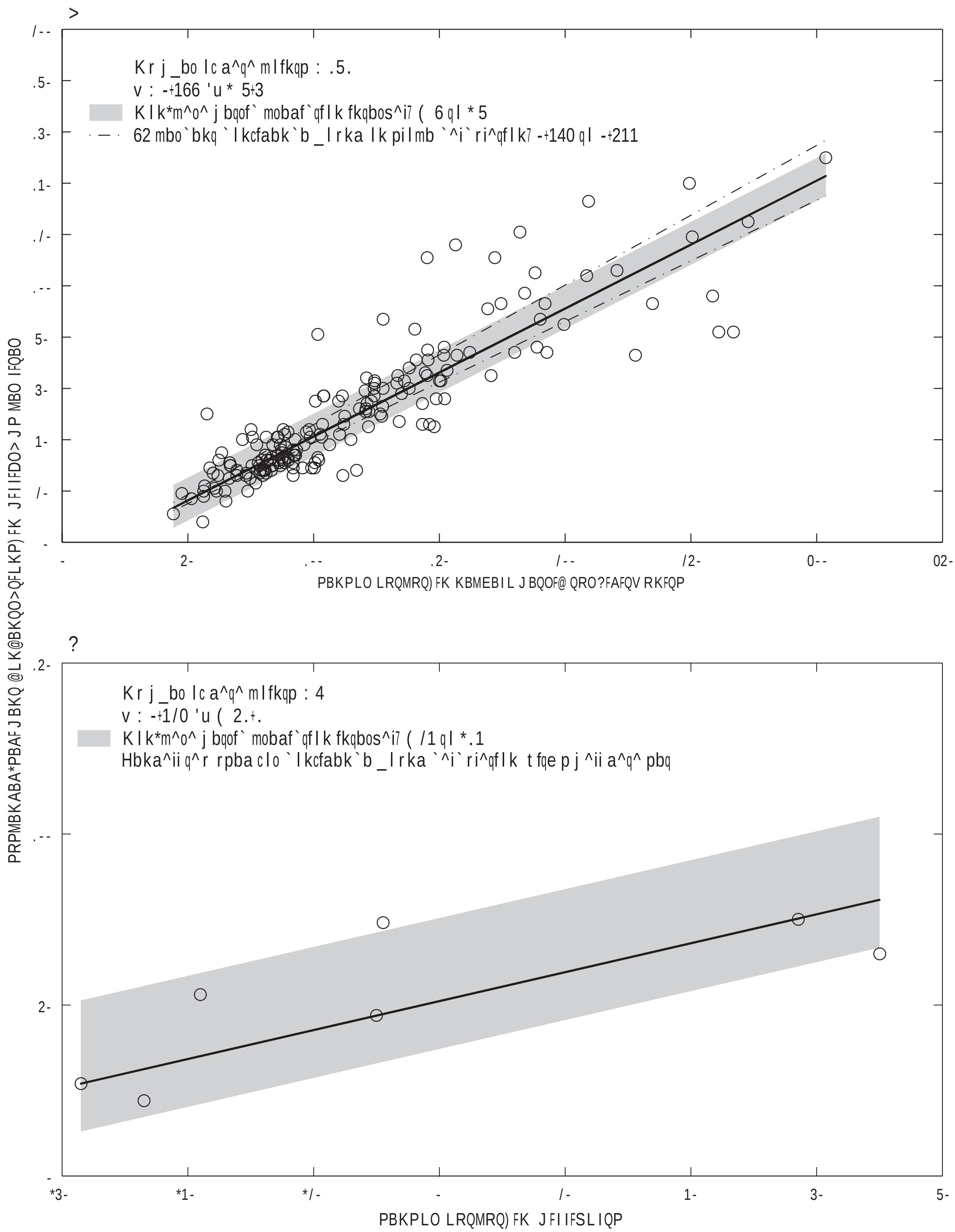

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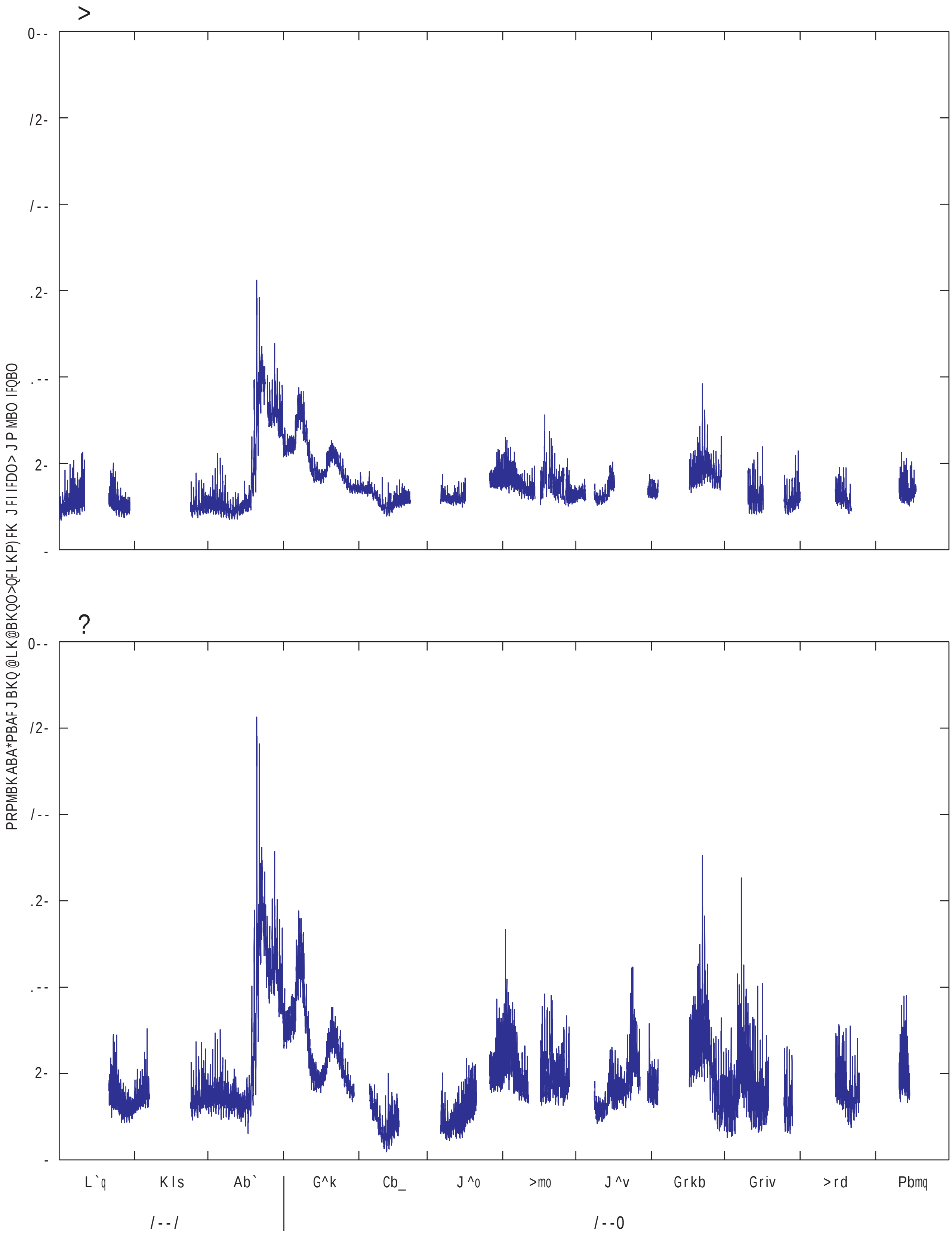

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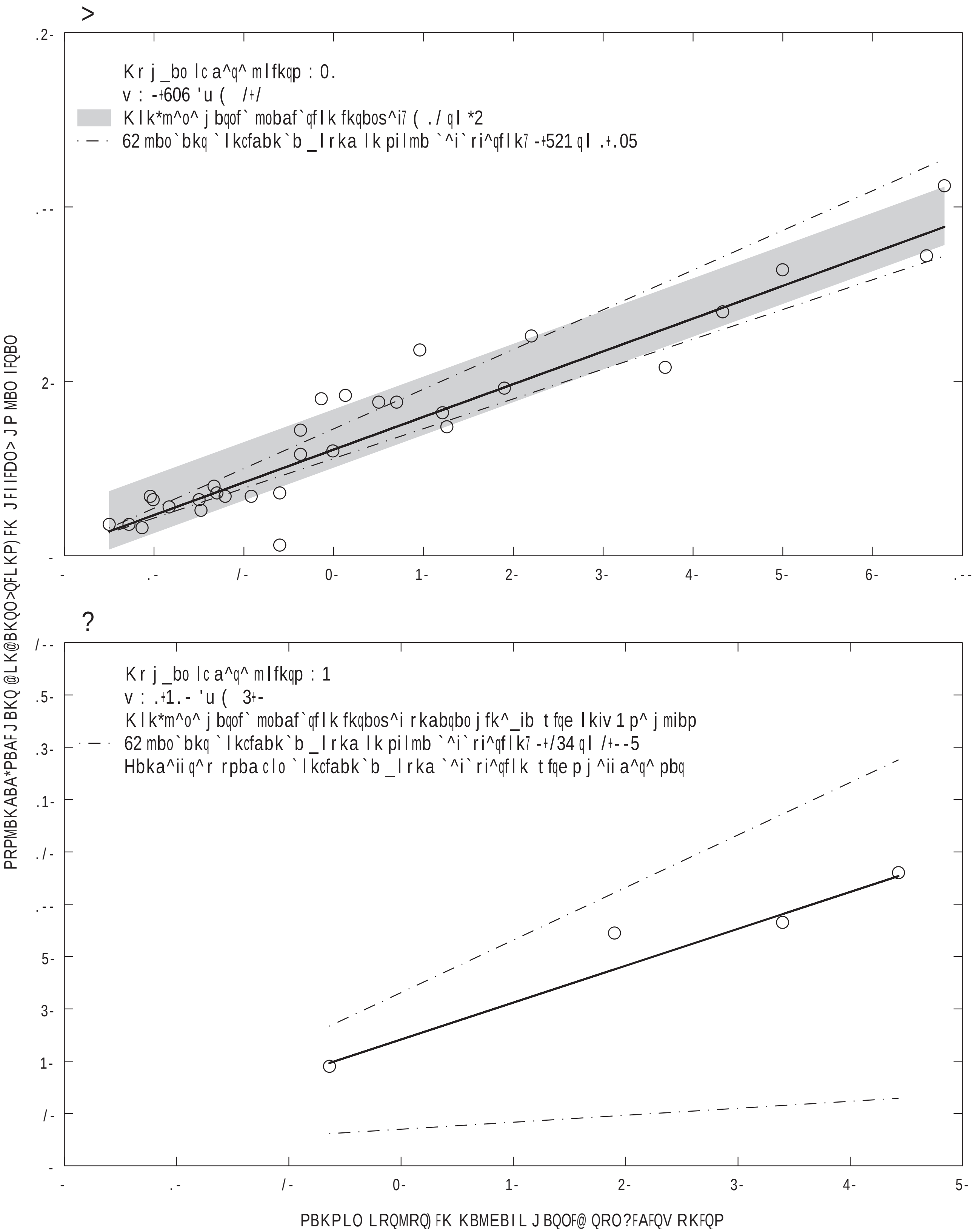

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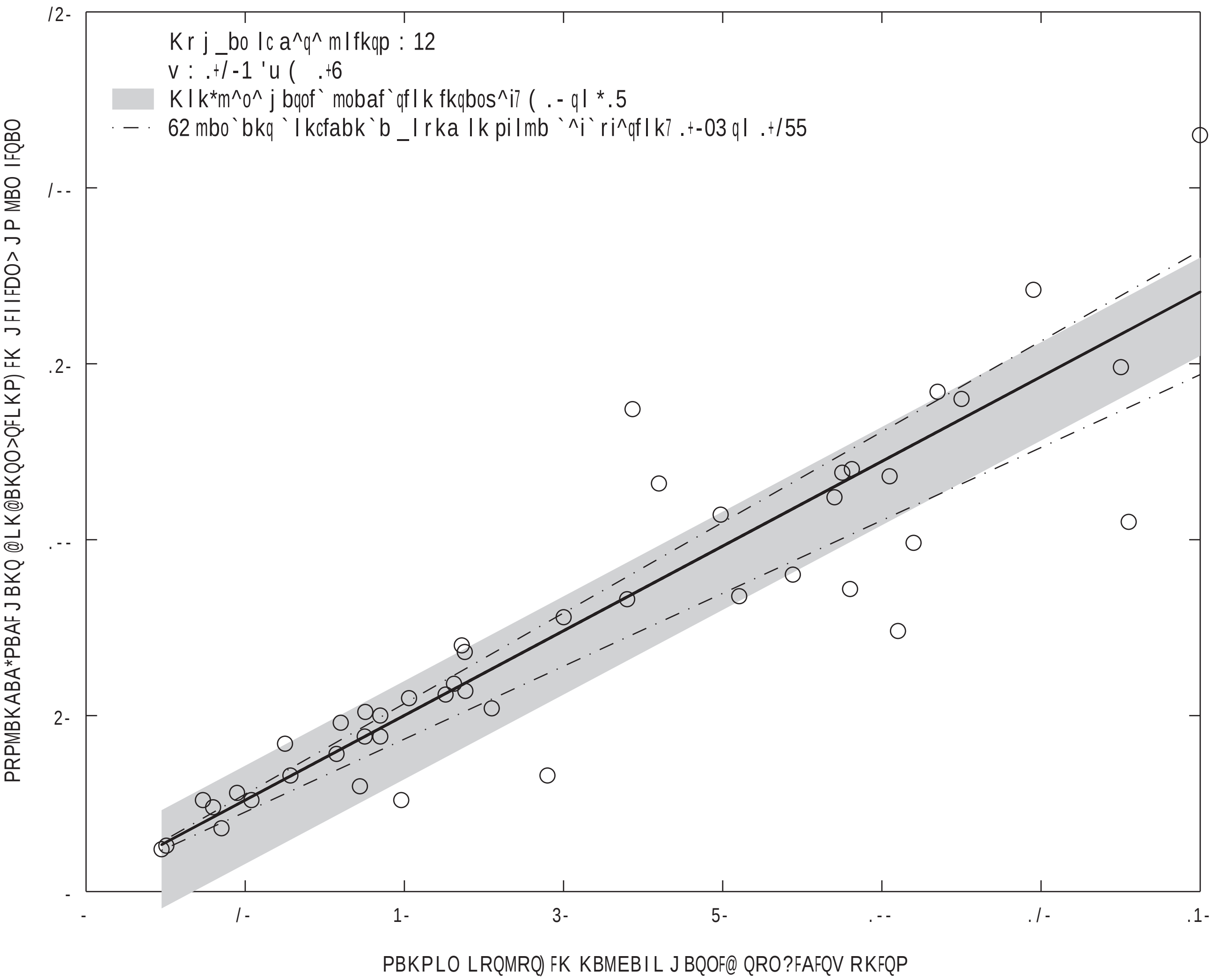

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