ROMÂNIA

JUDEȚUL TIMIȘ

CONSILIUL LOCAL AL COMUNEI PERIAM

Total consilieri Consiliul Local: 14
Prezenți: 12
Pentru: 12
Împotrivă: x
Abțineri: x

H O T Ă R Â R E A

Nr. 82 din 12.10.2026

privind aprobarea proiectului „Realizare sistem de producere și stocare a energiei electrice din surse regenerabile de tip solar al comunei Periam, județul Timiș" și a indicatorilor tehnico-economici asociați acestuia

Consiliul Local al Comunei Periam, Județul Timiș, ales în condițiile stabilite de Legea nr.115/2015 pentru alegerea autorităților administrației publice locale, pentru modificarea Legii administrației publice locale nr. 215/2001, precum și pentru modificarea și completarea Legii nr. 393/2004 privind Statutul aleșilor locali s-a reunit în ședința extraordinară din data de 12.10.2026.

Analizând temeiurile juridice, respectiv:

a) art. 15 alin. (2), art. 44 alin. (1)-(2), art. 56, art. 120 alin. (1), art. 121 alin. (1)-(2) și art. 139 alin. (2) din Legea nr. 1/2003 privind Constituția României, republicată;

b) art. 3-4 și art. 8-9 din Carta Europeană a autonomiei locale, adoptată la Strasbourg la 15 octombrie 1985, ratificată prin Legea nr. 199/1997;

c) art. 7 alin. (2), art. 1166 și următoarele din Legea nr. 287/2009 privind Codul civil, republicată (r1), cu modificările ulterioare, referitoare la contracte sau convenții;

d) O.U.G. nr. 60/2022 privind stabilirea cadrului instituțional și financiar de implementare și gestionare a fondurilor alocate României prin Fondul pentru modernizare, precum și pentru modificarea și completarea unor acte normative, cu modificările și completările ulterioare;

e) O.U.G. nr. 85/2023 privind gestionarea financiară a fondurilor europene nerambursabile alocate României din FEGA si FEADR, aferente politicii agricole comune, precum și a fondurilor alocate de la bugetul de stat pentru perioada de programare 2023-2027 și pentru modificarea și completarea unor acte normative din domeniul garantării, cu modificările și completările ulterioare;

f) O.A.P. nr. 1066/08.09.2026 pentru aprobarea Ghidului solicitantului - Sprijinirea investițiilor în noi capacități de producere a energiei electrice produsă din surse regenerabile de energie solară, cu capacități de stocare integrate, pentru autoconsum pentru entități publice;

g) art. 41 și art. 44 alin. (1) din Legea nr. 273/2006 privind finanțele publice locale, cu modificările si completările ulterioare;

h) art. 9-10 din H.G. 907/2016 privind etapele de elaborare și conținutul-cadru al documentațiilor tehnico-economice aferente obiectivelor/proiectelor de investiții finanțate din fonduri publice, cu modificările și completările ulterioare;

i) art. 7 alin. (13) din Legea nr. 52/2003 privind transparența decizională în administrația publică, cu modificările și completările ulterioare;

j) art. 2 alin. (2), art. 3, art. 5 alin. (2), art. 6, art. 30 alin. (1) lit. c) și alin. (2), art. 40-50, art. 56-58 și art. 80-84 din Legea nr. 24/2000 privind normele de tehnică legislativă pentru elaborarea actelor normative, rerepublicată, cu modificările și completările ulterioare.

Ținând cont de:

a) Apelul de proiect - Fondul pentru modernizare – Programul-cheie 1: Surse regenerabile de energie și stocare a energiei, sprijinirea investițiilor în noi capacități de producere a energiei electrice produsă din surse regenerabile de energie solară, cu sau fără capacități de stocare integrate, pentru autoconsum pentru entități publice;

b) Ghidul solicitantului - Condiții specifice de accesare a finanțării din Fondul pentru modernizare - Sprijinirea investițiilor în noi capacități de producere a energiei electrice produsă din surse regenerabile de energie solară, cu capacități de stocare integrate, pentru autoconsum pentru entități publice;

c) documentația tehnico-economică, faza Studiu de Fezabilitate, întocmită de firma de proiectare S.C. OGAUS TECHNOLOGY S.R.L. și înregistrat la Primăria Comunei Periam sub nr. 7135/ 08.10.2026.

Luând act de:

a) referatul de aprobare nr. 7158/12.10 2026 elaborat de primarul comunei Periam, județul Timiș, în calitatea sa de inițiator;

b) raportul compartimentului de resort nr. 7166/12.10 2026 prezentat de doamna Gyongyi Ponta, inspector I principal-urbanism și amenajarea teritoriului în cadrul compartimentului Dezvoltare Economico-socială, Urbanism şi Transport public al aparatului de specialitate al primarului comunei Periam;

c) prevederile Regulamentului de organizare şi funcţionare al Consiliului Local Periam;

d) avizul Comisiei de specialitate din cadrul Consiliului Local Periam.

În temeiul prevederilor art. 87 alin. (5), art. 110 alin. (1), art. 129 alin. (1), art. 129 alin. (2) lit. c), art. 129 alin. (6) lit. c), art. 134 alin. (1) lit. a) și alin. (4), art. 136, art. 139 alin. (3) lit. a), art. 140 alin. (1), 196 alin. (1) lit. a), art. 197-200, art. 243 alin. (1) și art. 255 din O.U.G. nr. 57/2019 privind Codul administrativ, cu modificările și completările ulterioare,

CONSILIUL LOCAL AL COMUNEI PERIAM
adoptă prezenta hotărâre:

Art. 1. Se aprobă proiectul de investiție cu titlul ***„Realizare sistem de producere și stocare a energiei electrice din surse regenerabile de tip solar al comunei Periam, județul Timiș”*** și a indicatorilor tehnico-economici asociați acestuia.

Art. 2. Se aprobă valorile proiectului de investiție, conform Anexei nr. 1 la prezenta hotărâre, care face parte integrantă din aceasta.

Art. 3. Se aprobă asigurarea cofinanțării proiectului, asigurarea fluxului financiar pentru implementarea proiectului și acoperirea contravalorii cheltuielilor, altele decât cele eligibile, precum și acoperirea contravalorii cheltuielilor neeligibile ale obiectivului de investiție ***„Realizare sistem de producere și stocare a energiei electrice din surse regenerabile de tip solar al comunei Periam, județul Timiș”*** din bugetul local al comunei Periam, potrivit Anexei nr. 1 la prezenta hotărâre.

Art. 4. Se aprobă documentația tehnico-economică, faza Studiu de Fezabilitate și indicatorii tehnico-economici pentru obiectivul de investiție ***„Realizare sistem de producere și stocare a energiei electrice din surse regenerabile de tip solar al comunei Periam, județul Timiș”***, conform Anexei nr. 2 la prezenta hotărâre, care face parte integrantă din aceasta.

Art. 5. (1) Reprezentantul legal al Comunei Periam este, potrivit legii, primarul acesteia, domnul Cornel DUMITRAȘ, în dubla sa calitate și de ordonator principal de credite și de administrator public al comunei.

(2) Se nominalizează primarul Comunei Periam, în calitate de reprezentant legal al comunei pentru relația cu autoritatea de management în implementarea proiectului.

Art. 6. Cu ducerea la îndeplinire a prezentei hotărâri se va încredința primarul Comunei Periam, compartimentul Dezvoltare Economico-socială, Urbanism și Transport public și compartimentul Financiar-contabil, impozite și taxe din cadrul aparatului de specialitate al primarului comunei Periam.

Art. 7. Prezenta hotărâre se comunică, prin intermediul secretarului general al comunei Periam, în termenul prevăzut de lege:

- Instituției Prefectului-Județul Timiș - Serviciul controlul legalității, aplicării actelor cu caracter reparatoriu și contencios administrativ;
- primarului comunei Periam;
- consilierilor din cadrul Consiliului Local al comunei Periam;
- Ministerului Energiei;
- S.C. OGAUS TECHNOLOGY S.R.L.;
- doamnei Gyongyi Ponta, inspector I principal-urbanism și amenajarea teritoriului;
- compartimentului Financiar-contabil, Impozite și taxe;
- responsabilului CFP din cadrul primăriei comunei Periam;
- la dosarul ședinței;
- se aduce la cunoștința publică prin afișarea la sediul primăriei, precum și pe pagina de internet www.primariaperiam.ro.

PREŞEDINTE DE ŞEDINŢĂ,

✍ Anișoara HĂRDĂLĂU

CONTRASEMNEAZĂ PENTRU LEGALITATE:

SECRETARUL GENERAL AL COMUNEI,

✍ Daciana BRONŢ

L.S.

_____

_____

CARTUȘ NECESAR DE INSERAT PE ORICE HOTĂRÂRE A CONSILIULUI LOCAL AL COMUNEI PERIAM, DUPĂ SEMNĂTURA PREȘEDINTELUI DE ȘEDINȚĂ ȘI CEA A SECRETARULUI GENERAL AL COMUNEI PERIAM			
PROCEDURI OBLIGATORII ULTERIOARE ADOPTĂRII HOTĂRÂRII CONSILIULUI LOCAL NR. 82/12.10.2026			
Nr. crt.	**Operațiuni efectuate**	**Data ZZ/LL/AN**	**Semnătura persoanei responsabile să efectueze procedura**
0	1	2	3
1	Adoptarea hotărârii [1)] s-a făcut cu majoritate □ simplă □ absolută □ calificată[2)]	12/10/2026	
2	Comunicarea către primar[2)]	12/10/2026	
3	Comunicarea către prefectul județului[3)]	13/10/2026	
4	Aducerea la cunoștință publică[4)+5)]	13/10/2026	
5	Comunicarea, numai in cazul celei cu caracter individual[4)+5)]	-	
6	**Hotărârea devine obligatorie[6)] sau produce efecte juridice[7)], după caz**	**13/10/2026**	

Extrase din Ordonanța de urgență a Guvernului nr. 57/2019 privind Codul administrativ, cu modificările și completările ulterioare:

[1)] Art. 139 alin. (1): „În exercitarea atribuțiilor ce îi revin, consiliul local adoptă hotărâri, cu majoritate absolută sau simplă, după caz.
(2) Prin excepție de la prevederile alin. (1), hotărârile privind dobândirea sau înstrăinarea dreptului de proprietate în cazul bunurilor imobile se adoptă de consiliul local cu majoritatea calificată definită la art. 5 lit. dd), de două treimi din numărul consilierilor locali în funcție."

[2)] Art. 197 alin. (2): „Hotărârile consiliului local se comunică primarului."

[3)] Art. 197 alin. (1), adaptat: Secretarul general al comunei comunică hotărârile consiliului local al comunei prefectului în cel mult 10 zile lucrătoare de la data adoptării ...

[4)] Art. 197 alin. (4): „Hotărârile … se aduc la cunoștința publică și se comunică, în condițiile legii, prin grija secretarului general al comunei."

[5)] Art. 199 alin. (1): „Comunicarea hotărârilor … cu caracter individual către persoanele cărora li se adresează se face în cel mult 5 zile de la data comunicării oficiale către prefect."

[6)] Art. 198 alin. (1): „Hotărârile … cu caracter normativ devin obligatorii de la data aducerii lor la cunoștința publică."

[7)] Art. 199 alin. (2): „Hotărârile … cu caracter individual produc efecte juridice de la data către persoanele cărora li se adresează."

Anexa Nr. 1
la H.C.L. nr.82/12.10.2026

INDICATORII TEHNICO-ECONOMICI

pentru proiectul : „*Realizare sistem de producere și stocare a energiei electrice din surse regenerabile de tip solar al comunei Periam, județul Timiș*”

Indicator	**Valoare aprobata**
Valoarea totala a investitiei, inclusiv TVA	1,402,538.21 lei
Valoarea eligibila, inclusiv TVA eligibila	1,045,473.61 lei
Din care TVA eligibila	181,445.83 lei
Valoarea neeligibila, inclusiv TVA neeligibila sau neacoperita	357,064.60 lei
Ajutor public nerambursabil solicitat, inclusiv TVA eligibila	1,045,473.61 lei
Din care TVA eligibila finantata	181,445.83 lei
Contributia totala a beneficiarului	357,064.60 lei
Din care TVA neeligibila, suportata de beneficiar	61,775.97 lei
Durata de implementare	12 luni
I.1 - Capacitate nou instalata de producere FV eligibilă	0,147 MWh
I.2 – Reducerea anuală estimată a emisiilor de gaze cu efect de seră	104.36 t CO2/an
I.3 – Producția medie anuală de energie electrică din surse regenerabile	177.33 MWh/an
I.4 – Producția totală pentru perioada de referință	3,546.53 MWh
I.5 – Factorul de capacitate al centralei	13.73%
I.6 – Capacitate nou instalată nominală de stocare	0.315 MWh
I.7 – Capacitate nou instalată pentru pompe de căldură	380.50 kW
AC.1 – C_an – consum anual de referință	0.00 kWh/an
AC.2 – P_an – producția anuală estimată	177,326.29 kWh/an
AC.3 – R_ac – raport dimensionare autoconsum	Nu se poate calcula - AC.1 = 0 kWh/an
AC.4 – R_P – raport putere stocare/ putere PV	1.068521
AC.5 – E_stoc – capacitate nominală de stocare	315.00 kWh

SC OGAUS TECHNOLOGY SRL
Arad, Calea Radnei Nr. 149bis
Email: office@ogaus.com

Unitatea Administrativ Teritorială
COMUNA PERIAM - Jud. Timiș
REGISTRATURĂ GENERALĂ
Nr. 7135
ziua 08 luna 10 an 2026

Beneficiar:	**COMUNA PERIAM**
Proiect Nr.:	410/2026
Faza:	S.F. (Studiu de fezabilitate)
Den. Proiect:	**REALIZARE SISTEM DE PRODUCERE SI STOCARE A ENERGIEI ELECTRICE DIN SURSE REGENERABILE DE TIP SOLAR PENTRU CONSUM PROPRIU AL COMUNEI PERIAM, JUDETUL TIMIS**
Amplasament:	Comuna Periam, judetul Timis; cinci instalatii pe acoperisurile cladirilor publice deservite

Px xFcQMYUkMcQdUdeQZ PQac_PfOQcQdUde_OMcQMQ^QcSUQUQYQOecUDQPU df cdQcQSQ^QcMNUYQPQeUd d_YMc aQ^ecf O_^dfZ ac_acUf MY O_Zf^QUaQcUWZ 5Vf PQef YeUZUd

SaNVR QR PNbNf

_ 7 zv G	@98; 9; B
St tG	d7R71d v vx yx st s x2
Qz 7b zv G	**dRNYV NdR eVefRZ QR bdaQgPRdR eVefaPNdR N R_RdTVRVRYRPfdVPR QV_ egdeR dRTR_RdNOVYR QR fVb eaYNd bR_fdg Pa_egZ bdabdVg NY PaZg_RV bRdWZ 5WgQRfgYfVZVé**
Oz z v t	**PaZg_NbRdWZ**
b zv t z z t G	dO_SMfdeQOT^_Y_Sj dcY
P x v z t zG	a x x u x5 x x vx x s x5s x x
Qt t z tu t	9D7:97; 9; B

Px xFcQMYUkMcQdUdeQZ PQac_PfOQcQdUde_OMcQMQ^QcSUQUQYQOecUDQPU dfcdQcQSQ^QcMNUYQPQeUd d_YMc aQ^ecf O_^dfZ ac_acUf MYO_Zf^QUaQcUWZ5VfPQefYeUZUd

SV6N QR dReba_eNOWYf NfV

V zt x v z t zG

dO_SMf d eQOT^_Y_Sj dcY

Os xs csv x ^ 7:@Et 5Msv5V v7Msv

M s x M^cQ O:M^ 7:ED:98:=79C7;9;=

Mv s F Tx Zs x gs x

Rtu t zt x v z t zG

dxy xu F z7Tx Q gs x

dO_SMf d eQOT^_Y_Sj dcY

Os xs csv x ^ 7:@Et 5Msv5V v7Msv

U s s x xu uxF z7Z Ps

dO_SMf d eQOT^_Y_Sj dcY

Os xs csv x ^ 7:@Et 5Msv5V v7Msv

Qxu us s s M^cQz sv WW5WN

cx x sF z7Rx x Mx s v

WRx x Mx s v

Os xs csv x ^ 7:@Et 5Msv5V v7Msv

Px xFcQMYUkMcQdUdeQZ PQac_PfOQcQdUde_OMcQMQ^QcSUQUQYQOecUDQPU dfcdQcQSQ^QcMNUYQPQeUd d_YMc aQ^ecf O_^dfZ ac_acUf MY O_Zf^QUaQcUWZ 5VfPQef YeUZUd

PgbdV_e

:7V t z z t z x u zv xz z ····· A
:7 Px xs t xu vx x ····· A
:7, _ v s u s vx u xv x 8 x ····· A
:7= _ v s vx u xv x xu vs 8 x s ····· A
:7@ Nx xyu s x x ····· A
:7A Qst s v vx yx st s x ····· A
:7B _ zs s xs y u s s s x x ····· A
;7e t t z z t zvz t zt z z ····· B
;7 R vs x s xs x x x s s s x ····· B
;7, O x s usv vx y s s x ····· B
;7= d s s x x zx us x u x t ux vx x x ····· C
;7@ O s x s x :; u xu x ····· C
;7A Ox x xs x us u x xu u x s ····· D
;7B ax x vx v x s x x s s xs v u x ····· E
;7C cxz vx s x s x x s x ····· E
=7evz t z v 6zv vz t t t z z ····· E
=7 as u s s x s s s x x ····· E
=7, Px u x xs x us s x x x ····· :9
=7= O x x s x s x x x ····· :D
=7@ R vs x s xs x us xz x x s x vx xyx s ····· :E
=7A S syu vx xs s x s x x ····· :E
A7N t t vz t z v 6zv vz ····· ;9
@7 Osv vx s s s v s s vx xyx s ····· ;9
@7, g x st s u s ux s vx svs s x ····· ;9
@7= d s s s xz s xs y u s s ····· ;:
@7@ d x st s xs uss vx xv ····· ;:
@7A a v u s agSUdl v x s xs x x zx us ····· ;;
@7B M s s y s u s s x st s xs x s s ····· ;@
@7C M s s u 6xyusu s x ····· ;B
@7D M s s vx x t s x ····· ;B
@7E c u s vx zx s x ····· ;B

Px xFcQMYUkMcQdUdeQZ PQac_PfOQcQdUde_OMcQMQ^QcSUQUQYQOecUOQPU dfcdQcQSQ^QcMNUYQPQeUd_YMcaQ^ecf O_^dfZ ac_acUf MYO_Zf^QUaQcUWZ5VfPQefYeUZUd

B7evz t zv t xt x vt z z ····; C
A7 O s s s ux s s xzx xs x ····; C
A7, Px u x xs x us s ux s xu s vs ····; C
A7= a u s v us x u 6xu u ····; D
A7@cx xu s xs ux x y vs x s x····; E
A7A d x x vx y s s x····; E
C7g ut 5t z zv t zx ····; E
B7 cxz ts u s s s xs u s ····; E
B7, d s s usvs s s usv x vx x x····=9
B7= csu vs xs s x xs s t us····=9
B7@cxz x x s xs vx xv zs s xs s x ····=9
B7A cx xu s xs u P^dT x u u vx s s····=9
D7V z z t zt5z t t zt t zt z z ····=:
C7 _ zs s xs x x s ····=:
C7, a z s vx tx x x y u x····=:
C7= _ x s x x x s s····=;
C7@Z s xs x s x v st s xs····=;
C7A Uy s x t u s x····==
E7P v zv t xt z vz····==
N_Rj N N7OdRhWd fRdZ VP eVPa_egZ bdRhV Vá_Nf ····=@
M7 S sv s 6 vs x xux s x u····=@
M7, Yux x x u ax s 6 vs x xux s x u····=A
M7= ds s Yux 6 vs x xux s x u····=B
M7@du s s us x x l6lg us WJ6 vs x xux s x u····=C
M7A du s s us x x l6lg us WJ6 vs x xux s x u····=D
N_Rj N O7eVZ gYNdVbhTVé eVOWN_fgdVR_RdTRfVPR····@9
N7 S sv s 6 v u x sv s x····@9
N7, Yux x x u ax s 6 v u x sv s x····@
N7= ds s Yux 6 v u x sv s x····@,
N7@du s s us x x l6lg us WJ6 v u x sv s x····@=
N7A du s s us x x l6lg us WJ6 v u x sv s x····@@
N7B N s s xz s s xu 6 d:····@B

NZCN s s xz s s xu 6 d; ····· @C
N_RjNP7ePURZRfRU_aYaTVPRRYRPfdVPR6e:eVe; ····· @D
O7d:6S sv s ····· @D
O7,d:6Yux x x uax s ····· @E
O7=d:6ds s Yux ····· A9
O7@d:6du ssus xxl6lg us W ····· A:
O7Ad:6du ssus xxl6lg us W ····· A;
O7Bd;6S sv s ····· A=
O7Cd;6Yux x x uax s ····· A@
O7Dd;6ds s Yux ····· AA
O7Ed;6du ssus xxl6lg us W ····· AB
O79d;6du ssus xxl6lg us W ····· AC
N_RjNQ7ePURZRfRU_aYaTVPRfRdZVPR6e:eVe; ····· AD
P7d:6S sv s ····· AD
P7,d:6Yux x x uax s ····· AE
P7=d:6ds s Yux ····· B9
P7@d:6du ssus xxl6lg us W ····· B:
P7Ad:6du ssus xxl6lg us W ····· B;
P7Bd;6S sv s ····· B=
P7Cd;6Yux x x uax s ····· B@
P7Dd;6ds s Yux ····· BA
P7Ed;6du ssus xxl6lg us W ····· BB
P79d;6du ssus xxl6lg us W ····· BC

:7V t z z t z x u z v xz z

:7 Qz zt u z v xz z

dRNYV NdR eVefRZ QR bda Qg PRdR eVefa PNdR N R_RdTVRVRYRPfdVPR QV_ egdeR dRTR_RdNOWYR QR fVb eaYNd bR_fdg Pa_egZ bdabdVg NY PaZg_RVbRdWZ 5WgQRfgYfVZVe

:7; a x t v t xz v zx z 8 z

U x x x O s ax s 5 vx e 7_t xu xs xs s u u s s t v t x vx v ux x s x x z x x xu ux v s s s5u us x xz s s x x vx x vx us v s x usv x t ux vx x x7 U x x s x x s s s 5 s xu s x xx s s s x s yxus x usv x5 s x x u syx x sux x s7

U x s s x x s z s xs x u vx us x u x x xs vx x x z x xzx x st x s x x u 7d s s x y u x xv us s x x s x usv 7M x s xs v x xs s t us s s x s x s x5 x s z s xs u s x s x x usx v u s s s x x z s v t s ts x u u v u ux x xs7

:7= a x t xz v zx z zv xt 8 z t

U x s x x s s v xu vx O s ax s 7_zs s xs y s s 5u su s xs us 5sv s xs xu s x x s xs x s x x xs xs s s x tx xyus 5 u x s x u x x x7^ x x u t xu x s s x yxus x u x s x z usG v ux xs5 us xs s xs x x z x s s suxx s x t ux7

:7A Oz z v t z z

Nx xyus x x O_Zf^MaQcUWZ5 vx e 7d vx x x S sv s5Yux x x u ax s 5ds s Yux 5du s s us x x Ufdg us UW du s s us x x Ufdg us UW7d x x x y s ux5su s x x x ux s us x y u s sux u u t xu x7

Q x z s v s x x vx s s u s tx xyus 7R u s xs ss x x zs s s x x u x t ux vx x x5ys s u ts xs vx s x usv 7O s xs x z us x x x vx s x s s s s us su s s u x vx usv s7

:7B Rtu t x xz z tu t z

Rz z	Qt z xz xz vt z
a xu s zx x s	dO_SMf d eQOT^_Y_Sj dcY
Uvx yus x	Of Uc_=B; EBE; CGV; 8DE98; 9:B
dxv u su	Os xs csv x 7:@Et 5Msv5 vx MsvG yyuxL zs 7u
dxy xu	z7Tx Q gs x
^ s xu 8ys s	@98; 9; B 8 d7R76 d v vx yx st s x
O su vx x s x u	BBEC8; @79E7; 9; B

Px xFcQMYUkMcQdUdeQZ PQac_PfOQcQdUde_OMcQMQ^QcSUQUQYQOecUDQPU dfcdQcQSQ^QcMNUYQPQeUd d_YMc aQ^ecf O_^dfZ ac_acUf MY O_Zf^QUaQcUWZ5VfPQef YeUZUd

Rz z	Qt z xz xz vt z
Ps s x st s	9D7:97; 9; B
O vx us u	: Qf c l A5=@=@ x

Ps x x zx x ux x x zx ux s x u sv x s v x vx t x xyu s 7d v x s v u vs x x vx s x5 x x x vx us u 5 x s x x v x s x x ux x7 d sys s s us s5 sys s v t s x v x vx yus xs usvs s s s x yus v yx x s x us u x x u x s s x7

a v u s y s us sv s s s s y vs x s x s agSUd x u yz s x s s s x7 Q s s xs x x ysu s x sux s x u x u s t x x ux s 5u t s x xu ux s x sz xzs x s s s 7gs x x ux sv s x s x x x xu ux s x ss y s ux7

:7Ca t t zt v t t t z z

P z t	Zt z xz z z t e:	S v z
a v ux x y s us	; BD v xG:@C5@99 h POG :AE h MO	O u ss x su x 5u xu s x s st x zx x s x s x u sv 7
d us x x xu u us	=:A h s G:AC5A h	O u x x YRa5u u s vs u v s s NZ d8aOd8QZ d7
Uus x	A x xG=D95A99 h x u	a x vx us v s sx 6s s xz s x s s vx us x7
dx u x u	B:979@5== h x u8s	Q x z s s vx us x s s vx x x7
Q x z x x us s s	B@97A@=5=E h x u8s	Q x z s s zx x s x5u s s xs vx x vx A. 7
Ox x x x xu us x s s	:CE79C; h 8s	O s s s x vx us v s s s v x s x7
cxs s x	:; Gx xu x B	Q xu x x @6EG u vx x usv ux :; 7

Rxus x s s t s x x u u x vx u x u 5 x s x5ts x x u x 5 st vx x ys s5 s s x u us 7O s vs us s xs s u 5s us us xs ts x x v y s u7Q x z s v t s x s x x zx s s su v t v xu s s usv 7

dx s s xs y us s s s x x x x x x s s x t xu x7 Mv s xs s s s z s sux xs xz vx suux s xu s x x5x vx s x x zx us5 x5 s s x s x s v t s 7_ vxyxu x us s x xs ux s x s s v xu 7

Px xFcQMYUkMcQdUdeQZ PQac_PfOQcQdUde_OMcQMQ^QcSUQUQYQOecUDQPU dfcdQcQSQ^QcMNUYQPQeUd_YMcaQ^ecf O_^dfZ ac_acUf MYO_Zf^QUaQcUWZ5VfPQefYeUZUd

;7e t t z z t zvz t zt z z

;7S xt z t zt z z zt t t z

Osv x t ux xs s x x u x s x vx us x x zs x s s x5 u v t x sv s s x5 vs x tx xyu s 7U v ux xs x vx usv s s y s x u vx us x 6 ux x x xu us x x s7Muxs s ux x x x x y vs x us su s y s ux s us s us x7

M u x xs v x s sx 6s s5 s s x y s us su s x x s xs x x z x s t x s x s x x z x s x suxxs usv x7a s vx usv s s yx s x x z x v sx x x us x szx x u5 s y s u v ux x x z s x xu us xux s s x s v y u s xs s7Mu s vx s xs s s xs x x z x s x x x s x s x5 x x x x x z x v t x7

d s s s x v s ux s u x x x suxxs u u s s s x x7d: xs s v x ^6 x e_aO vx AA9 h ts x YRaGd; xs s v x aQcO t ysu s x us6 u s vx A99 h ts x ^Z O7M t x x u v x sx 6s s xz xs s s s x s x x u s x us x7P yx x x xs x x x xs y s us5u x s5 x y s s us s vs x x x s x x ux7

dux s ys s x x x x s x x xs x u x u u x s7O s s s s xs s suxxs usv suxxs x x z x x us s s5s yx us v yx x x x v x ux s s s v xv ux xs x u t u7a xu x x zs s us uux x d: s d; Guxx v s ux s s x s x7

;7; P z t vtx xz t t z

d v x x u s u 6usv s TS 7E9C8; 9:B5u v yus x u x s x s ust x7 Osv vx y s s x x x R v x vx s x5a z s 6u x x : 6 d x xzx x st x vx x x z x us xs x x z x 5 x us su s vx v ux x s x x z x x xu ux s x5u us x xz s s5 x s u x s t ux5u y S v u s syx x _ZQ 7:9BB8; 9; B7

a xu u t s us su s vx v ux x5 us x s x s x x z x 7Rxus x ts x x x x xz s s ss y s ux syx x x usv 7Uus us xs v x xs s t us x x vx su s s5 s y vx us us x x x u v s vx x x s y s u s s 7

Os su s xs vx xyx s s x ss x st x x us v x s x sx s x v x u x u s x sx s x x s x u x s x s 7Os su s xs xu x x s sux x vx x s x x s s 7a x xs aOd x x svs zs s s v us vx us su s x y s us7

d us xs x x s s s s x xs y s us vx xyx s5 x x z s ss u x s s x x v s x x v s s x7Q x z s st s5 s s vx svs u xs vx vx us us x5x x x x s s x s s 7a x x x vx x vx usv s5 x y s s x x s vx xyx s x x ux =5A95 x u s x v x s us s x us s s s s7

;7=e t t z z z vt z v z u vz xz z z

M x s xs x xu us s usv x x xs s s ss x 7^ x x x u xu xs s s x st zx x s x5 s x x u s x 5u u u x vxv us x x s s x x x x s s7U xz s xs x us x xs xs s s ss x u sv s s x5 xz vx xyx s AA8@A z svx O7

ax x x x zx u s v x s x x u x s s ux u u x x vx x vx us v s7dx s s s v x x v x x s s u x vx y u s x x s s5 u ysu s x7Ux yus xs t xu x v sux x x x ysux vx x u usvs s 5 ys s s s xs x x OR u vx yus u x us s u s x 7

auzv	Y vt t z	P vtxt t	V z t z
S sv s	ax s 5 vx e	@99DE96O:	Rg 4 us x 4 avO5 us
Yux x x u ax s	ax s 5 vx e	@99DC96O:	Rg 4 us x 4 avO5 us
ds s Yux	ax s 5 vx e	@99DC96O;	Rg 4 us x 4 avO5 us
du s s us x x U6lg us UW	ax s 5 vx e	@9@9DE6O:	Rg 4 us x 4 avO5 us
du s s us x x U6lg us UWW	ax s 5 vx e	@9@9DE6O;	Rg 4 us x 4 avO5 us

S sv s5 u x vx u s s ux s xs s z s xv us s 5 s ss vx s xs s y u xs7_ zs s xs us x s s xx x ux vx u u s x x x 5u 5 x s t u 7 Z s s xs u x xu us x vx us v s x x v us vx s s xs v u x y s ux7

;7AP t z t z:; v zv z

U x s vx x x s x x x s s x6vxux t x s s u x vx x s s x7gs x x s x h x x s y x xu u x s s s xs ux s d:7cx s s xs x s xs s s x s s x vx v x s x s x yxus x x vx us v s7

O s x u x s v s s x xux s u s x v s s s y vx x s s x x us vx7 Q x z s s s s s x x x x s s z s vs sG y s svs zs us s x x s s x x u s s x s v u x s x us7gs x s x t s x x x s x s x xu s x x s xs s 7

Y t	T tx t 1 i 2	Yvz z z v 1 i 2	et t Yvz 1 i 2
Us s x	B7=@C5::	E7D:@5==:	;7DBA5C9A
Rxt s x	A7C=;5DCA	D7DB@5AAC	;7ADD5=CE
Z s x	=7;BE5C;@	A79AA5DBC	:7@CB5;C;
M x	=7:B@5;@E	@7DE;5DCA	:7@;D5BA:
Z s	=9C5C=D	@CA5D@B	:=D5E@=
U x	;EC5D::	@B95@EB	:=@5@B:

Px xFcQMYUkMcQdUdeQZ PQac_PfOQcQdUde_OMcQMQ^QcSUQUQYQOecUOQPU dfcdQcQSQ^QcMNUYQPQeUd_YMc aQ^ecf O_^dfZ ac_acUf MYO_Zf^QUaQcUWZ5VfPQefYeUZUd

Y t	T tx t1i 2	Yvz z zv1i 2	ett Yvz 1i 2
U x	=9C5C=D	@CA5D@B	:=D5E@=
M z	=9C5C=D	@CA5D@B	:=D5E@=
dx x t x	;EC5D::	@B952EB	:=@52B:
_u t x	=7;BE5C;@	A79AA5DBC	:7@CB5;C;
^ x t x	B7:@;5=BB	E7@EC5C=E	;7CC=5;B=
Pxux t x	B7=@C5:=	E7D:@5==;	;7DBA5C9B
fafNYN_gNY	**=B7DF;**	**BB7=AA**	**:C7C9**

Y t	evtt vtW1i 2	evtt vtW1i 2
Usl s x	@7E:;52DB	C7D:A5CDA
Rxt s x	@7@=C59D@	C79AE52E
Zs x	;7A=95BC@	@79;B5=:@
M x	;7@@E59=E	=7DEB52==
Zs	;=D5D:	=CD5E@C
U x	;=952ED	=BB5C;=
U x	;=D5D:	=CD5E@C
M z	;=D5D:	=CD5E@C
dx x t x	;=952ED	=BB5C;=
_u t x	;7A=95BC@	@79;B5=:@
^ x t x	@7CA@59:D	C7AB=5BB=
Pxux t x	@7E:;52DC	C7D:A5CD@
fafNYN_gNY	**;DTD9;**	**AA79DA**

Y t	P z t t1i 2	b x v z She:1i 2
Usl s x	=:7CAA52E	A7CEB5@;
Rxt s x	;D7BD;5=:=	:97=E95==
Zs x	:B7=AD5DA:	:B7D@A5A:;
M x	:A7D=:5@C	:B7@CC5D::
Zs	:7A=E5BAB	;97@E95E;B
U x	:7@DE5EE9	;=7=CB5C;
U x	:7A=E5BAB	;:7E=D5DD
M z	:7A=E5BAB	:E7ED@5DB;

Px xFcQMYUkMcQdUdeQZ PQac_PfOQcQdUde_OMcQMQ^QcSUQUQYQOecUQQPU dfcdQcQSQ^QcMNUYQPQeUd_YMcaQ^ecf O_^dfZ ac_acUf MYO_Zf^QUaQcUWZ5VfPQefYeUZUd

Y t	P z t t 1 i 2	b x v z Sh e: 1 i 2
dx x t x	:7@DE5EE9	:B7,=;5D@B
_u t x	:B7=AD5DA:	:;7ADC5;D=
^ x t x	=97C=:59A9	D7C=A5@C:
Pxux t x	=:7CAA5@,;	@7@C:59@B
fafNYN_gNY	**:DF79D;**	**:DD7=;C5;F:**

O xs s s ssv x x x z x v s ux x x us s x x x yxu s s yxus x s7Ud s5 u vx us x x x v us 5 ux x s s s x x s xv sG s s5 v u s vx s x x yxu x ux x xs us s7c x xs s t us us xs s us u x x y u s x s x sux x 7

e s s s yxus t xu x x s t s s x y s ux s sux x s usv 7^ x x u xs u x s x s s u suxxs x x z x s x vx us v s7e s x s s x vx v x s x s s =A7CE;5 AA7=@@5:B7B95;C7C9; @@79C@ h 5 x xu :CE79C; h x xu 7

;7BPz z zt z vt v zzv v z t

Ptx z	e t t t t 1 ;2	Vt z1 2	h 1 =2
S sv s	@CA599	=599	:7@,A5999
Yux x x u	:7,A95AD	=5C9	@7B;C5@B
ds s Yux	;=9599	=5C9	DA:5999
du s s us UW	=@E5B9	=5C9	:7,E=5A;9
du s s us UWW	BDB599	=599	;79AD5999

d syx x x s x us su x xs s s x us x5 su x x v t x x v x7ax yxus x usv x5 us x x us u s us v x sys s s s xs s7^xux s vx x x x us x x z s s s s v uxF s us su x xs s u s xs vx us u 5 s s v s x s x u vx us x xz s 7

N s s s v zx x x z s s y s s s vx x x z s x us s s7Z s s xs vx x vx A. x x s us s z s vs s5 s yx us bpzx l :59A bp 7O x xu u x x x vx x s v x x z s s zx x s x x y s s s x x s s x FQpx l bpzx 8 dO_a7Muxs s vx s x x x suxxs ts s x x zx us s x us u x x xu 7

Ptx z	c 1 i 8t 2	c t t 1 i 8t 2	ePab e:	Rzzv v 1 i 8t 2
S sv s	:;:7D@5=	:;C7E==5E	=5AC@=A	=A7CE;
Yux x x u	:DD7C95=9	:EC7ACD5D;	=5AC999	AA7=@@

Ptx z	c 1i 8t 2	c t t1i 8t 2	ePab e:	Rzzv v 1i 8t 2
ds s Yux	AA7EE:5B@	AD7CE:5; =	=5B=D9C	:B7B9
du s s us W	E@7DB5B=	ED7DEA5EB	=5AC999	; C7C9;
du s s us WW	:@E7DA:5B=	:AC7=@@5; :	=5AC999	@@79C@
fafNY	**C:979A:5==**	**CA97BA=5=F**	**6**	**:DF79D;**

cr z J:59B cr HRrz5xP J cr z 8ePabHRrz5 zv J t Rrz5xP

gs x x x zx ux s sx sx v x s xxu ux x s h x x 7axy s s x xs xu sx s s s t vx x vx u x s v x x x z s x us s s x x z s x xu us u s s x 7Qs x x s s v x O_a s s x s x xs s x x s s vx usu u v x ysu x v x s xs xu x xu ux7

U ux s x x zx u5 vx xs s s s s x u x u s t x sx 6s s x x vx :99. 7cxz s x x s vx x svs xs s ux x usv u ts u s us5u xz vx xyx s AA8@A z svx O7cx xs s x xu us x y u s xs x x s x x ys s v u x y s us yu x s7

;7Cbz z xz x z t z z t t zt x v z

V t t z	P xz x z t z 1i 8t 2	b x v z e: 1i 8t 2	b x v z 8 v 1. 2
S sv s	=A7CE;	=A7C; E5E; @	EE5D=
Yux x x u	AA7=@@	A@7E:D5; :C	EE5; =
ds s Yux	:B7B9	:A7DCE5EBB	ED5; C
du s s us W	; C7C9;	; C7.; D5; CB	EC5E=
du s s us WW	@@79C@	@=7BBE5E9B	EE59D
fafNY	**:DF79D;**	**:DD7=; C5; F:**	**FF59=**

Rxus x u x s x x xzs vx ss s x7^ x x x s s u u s x s x s xs s xz s s xs s t xu x s x u x7a xu y x x u u ux us x vx v ux x u 5u us x syx x s yxus s7

cs v u x s s x ys s vx u x s x x 95EE9; A:5 t sz vx v x s x vx :597Mux s vx u x s xs s s s s us su s s u ux x xs yus s7U y u v x xs x vx x s s usvx x s s s sxGx x s v t s s 5v s y u s xs us 7

;7Ddz xz t z t z z t z

cxz vx y u s x x x ux vx s 5u s u y u us s x x u u x vx s t v xu ss s u t u x xs s7Nx xyus s x xvx x suxs x s vx v t x suxs

y x uxxvxu v uxxsx x x7cxz s sxsysussssxxzx sxx x
xs xu xussv usvx s yx y us xxzx7

Nsxs x usv s x xs su us s sux s s t 5 s susv x 6 xzs s s s x
s s s x x7O s vs x xzx us t x s sxs u xuss v yus xx x ux sx
su v 7R x vx v u x5 us us x5vx us us x5u u t u x xs s s x v u7

cx s xx x ux s x d: xs s xs us su s y s ux vx 95@C@99 Zh5 ss xs us
s x vx 95=:A Zh 5 xs s xs us su s x ux vx =D95A99 h v ux xs x s s s :CC5=; B; DE
Zh 8s v s s s7R u s xs v t s x x u t u x x s xs x s x x
yxus x usv x7

=7evz t z v 6zv vz t t t z z

=7 bt v t t z t t t z z

U x s x x s s s s us s xs ax s 5u s ax s 5 vx e 5 s u u u vx usv t ux7
d s s yus su x x xx x ux syx x x sux s7 d sys s v t s vx xyx s x
ss s y s us x x =99 ; s yxus x usv xG s x us x s x s x d v6Q u s x =9 z svx7

Muux x x xu x5x s s x x x x x zs xs s u xx us x vx suux s x usv 7
M s s xs xu s x x s xs s u u s x t ux5x su s xs s x x x ux suux s x x x xx
x ux s x su x 7^ x v ux x xs s s vx s x xu u x ux x u u t xu x7

auzv	P vtxt t	Nv z x u 1;2	a z t z 8 v t z
S sv s	@99DE96O:	=99	d v6Q 8=9 z svx
Yux x x u	@99DC96O:	=99	d v6Q 8=9 z svx
ds s Yux	@99DC96O;	=99	d v6Q 8=9 z svx
du s s us UW	@9@9DE6O:	=99	d v6Q 8=9 z svx
du s s us UWW	@9@9DE6O;	=99	d v6Q 8=9 z svx

=77 Pt tv z v z v t z t z v t x

S sv s5u @99DE96O:5s x sys s s us s vx @CA599 ; s x s vx =599 7g
s t s x u x x :7@;A599 =7ax su x syx x x xs s A@ v x y s ux d:5 s
s x us s ss x u vx x 8 x s x x5 us xs vx B9 h x vx x vx us v s vx
BC5E9 h x u7Qu s x xx x u xu xs s s ss x s x usv 5u x s s x suux x
x x x7

Yux x x u ax s 5u @99DC96O:5s x sys s s us s vx :7;A95AD ; s x s vx =5C9 7
g s t s x u x x @7B;C5@B =7ax su x syx x x xs s D= v x y s ux

d:5 s s x us s ss x u vx x 8 x s x x5 us xs vx :99 h x vx x vx
usv s vx :; A5D9 h x u7Qu s x xx x u xu xs s s ss x s x usv 5u x s s x suux
x x x x7

ds s Yux 5u @99DC96O; 5s x sys s s us s vx ; =9599 ; s x s vx =5C9 7
g s t s x u x x DA:5999 =7ax su x syx x x xs s ; @ v x y s ux
d:5 s s x us s ss x u vx x 8 x s x x5 us xs vx =9 h x vx x vx
usv s vx =B599 h x u7Qu s x xx x u xu xs s s ss x s x usv 5u x s s x suux
x x x x7

du s s us x x U6Ug us UU5u @9@9DE6O:5s x sys s s us s vx =@E5B9 ; s x s vx =5C9
7g s t s x u x x :7; E=5A; 9 =7ax su x syx x x xs s @ v x y s ux
d:5 s s x us s ss x u vx x 8 x s x x5 us xs vx A9 h x vx x vx
usv s vx B; 5E9 h x u7Qu s x xx x u xu xs s s ss x s x usv 5u x s s x suux
x x x x7

du s s us x x U6Ug us UU5u @9@9DE6O; 5s x sys s s us s vx BDB599 ; s x s vx
=599 7g s t s x u x x ; 9AD5999 =7ax su x syx x x xs s BB v x
y s ux d:5 s s x us s ss x u vx x 8 x s x x5 us xs vx CA h x vx
x vx usv s vx DC5E9 h x u7Qu s x xx x u xu xs s s ss x s x usv 5u x s s x
suux x x x x7

=7; a t t zt v z v t u t zt v zv t t z

k x x vx u x vx xs s ys s vx suux t u 7ax s x x x s x s x x vx usv s x
s xs s s xx x vx s s x xy s x s sx 5v s x x vx x u suux s st x us x7O vx
s s v vxz s x u xu s x x su s x s yx us s s zs x x x5 s x s syx x vx
u u s x7

U x s x x5 st x ts x x x s s xs s x x ux x s x5u xu x ys s vx xu s 5 u
xus ux suux xs s 7dx s s xs s s x xs vx zx s suux t x x s 7
Os x vx suux s xu s x x y x us s x s x x vx vx s x7

M s s xs x su x xs s u s xs x s s s x x 7Uu x x s xs s vx s xs zx x s s
suux x x7Z s x xs xs s u x x x x s ux u s t x x s x s u x5u y s x
s u xysux xs x s x s s s x s 7^ x xs s v x x v x x x x u s s x 7

=7; Qz v z zt z vt t z z z

=7; 7 P t t z z t t t vz t

Pt tv z vt	e: 6 t t	e; 6 t z t t
M s s x x	A5 x u s v x v x x x	A5sux xs u s v

Px xFcQMYUkMcQdUdeQZ PQac_PfOQcQdUde_OMcQMQ^QcSUQUQYQOecUOQPU dfcdQcQSQ^QcMNUYQPQeUd_YMcaQ^ecf O_^dfZ ac_acUf MYO_Zf^QUaQcUWZ5VfPQefYeUZUd

Pt tv z vt	e: 6 t t	e; 6 t z t t
Z v x	; BD AA9 h 5^6 x e_aO	; BD A99 h 5aQcO t ysu s us6 us
a x x u s s PO	:@C5@99 h	:=@59 99 h
a x x x s x MO	:AE h	:E9 h
a x x Rg vx xyx s	:@C5@99 h	:=:599 h
d us x s s 8 aOd	=:A h 8:AC5A h	=:A h 8:AC5A h
ex z x 8 P P 8 s vs x uu	YRa 8 E9. 8 E9.	^Z O 8 DA. 8 DA.
Q x z x st s	; D=5A9 h	; BC5CA h
a x vx Rg	:@	:B5A.
_ x s x 8 u s x	d v6Q 8=9 z svx	d v6Q 8=9 z svx
Os su s x x us	=D95A99 h	=D95A99 h
O x xu u avO	:CE79C; h 8s	:D=79:; 5; DC h 8s
a v u x y s us	:CC7=; B5; E: h 8s	:AB7A:E5A== h 8s
gs s x u egM	:7@9; 7A=D5: x	; 7C@E7B=B59 x

M t x x ux s u v v ux xs y s us5 us xs x x x vx x vx us v s7ax x usv x u x u u xGus su s x x x s v s x s x vx vx s x s sux x s 7d: s yus x xs s s x s v x x suxs s vx vx s x x z s st s s s x s t s x 7 a x xs x s x x x x x s s v u vx x xs v x 7Ys yxus x s s x5 x xs vx xyx s x v us vx us su s x us x x x v x PO MO7U d; 5 s du s s us UW5 xyx s x x vx =9 h 5u x s s x x 5vx us vx v x s x == h 7Ys ux x s x s s s x x d; 5 x xs PO x x s xs vx x s s7

=7; 7 Z x z5vt t vz t zt tv z

Ptx z	Z x z e:	QP 1 i 2	e t t t x z 1 ; 2	av t z x =99 ; 1. 2
S sv s	A@ AA9 h	; E5C99	:=E5@D;	@B5@E
Yux x x u	D= AA9 h	@A5BA9	; :@5=DE	C:5@B
ds s Yux	; @ AA9 h	:=5; 99	B:5EE;	; 95BB
du s s us UW	@ AA9 h	; ; 5AA9	:9A5E9=	=A5=9
du s s us UWW	BB AA9 h	=B5=99	:C95@CD	AB5D=
f a f NY	**; CE**	**:AD5A99**	**CF; 5; AA**	**AC5B**

Z v xx d: ^6 xe_aO 5u xx ss AA9 h x v 7P x xvx xyx s :5=@ ;5;CD 5s sys s s s s us u x x ;5AD= ;7as s x xxu u s v s t x s f l @; g5U l :=5 M5f u l @E5E g Uu l :=5E M7

Os x y x5 x s x d v6Q 7U u x s agSUd5s x x 6@A z svx ys s vx d v5 s u s xs x x =9 z svx ys s vx ss7Z s x s x x u u s s sx s x x v x G x s x us y s s x x x uxs vx s t x x s 5s us s x x x vxs s x 7

d sys s v x x x s s s xyxu s s s 5 s s ss xux s s u s x u s x x vx suux 7 _zs s xs us s xs s xx t x x x x x s s5 u zx xs s x 5 suux s x x x xx su x x s s x ys s vx t su x7 Ys ux 5us u s ;:@5=DE ; v ux =99 ; v t Gs ux x s x u s v sys s v x x x s us7

cs x x5u x x x x vx s x s xz us x u s t 7a u x x vx y s x v x s t s x s s v 7Yxzs x x xu ux xus ux x s x s vx vx 5u vx x s s x x x7^ s vx vx s x x sux s d: d;7

=7;7=V z t z5 t zt v xz z z t t

Ptx z	P z z NPe:	e 6 t x z	Zbbf zvz t z 8 x u z
S sv s	: =9 h	:@4:@4:=4:=	;8=
Yux x x u	: A9 h	:@4:@4:@4:@4:@4:=	@8@
ds s Yux	: :A h	:; 4:;	;8;
du s s us UW	= D h	:@4:@4:=	=8B
du s s us UWW	: @9 h	:@4:=4:=4:=4:=	=8@

d z x u xu s x s s x x suxxs s x Zaae s sux s s vx v x5suxxs x s x suxxs u s x7d z x u z v yx x x s s x x Zaae v u x7U u yz s s z sv x5ux x v s z vx:@ v x ux x v s vx:= v x y xs s v s z x vx s x7

Ys ux x s x s x z 5u u vx:@ v x vx:= v x7Ys ss vx v s z vx:; v x7Ys du s s us UW5ux x x z vx:@5:@ := v x s us x ux x x s x vx D h7Ys du s s us UW5us x x y s v 6 z vx:@ v x s z vx:= v x7

U x s x x ys s x s z s u x s PO8MO5 s xs u vx x x s s5 xu x u us s u s szx x x x zx u7 O u xx vx x x s x s s x xu x vxv us x7a x xs vx u x xx x u x s s u x s s xs v x 5u v x vx x x Zaae u u x sv s s 7

Ptx z	P z z NP e;	QP e; 1 i 2	Sh xz z z t e; 1 i 2
S sv s	; ;9 h	;C5999	;C5999
Yux x x u	; =9 h	@;5A99	@;5A99
ds s Yux	: ;9 h	:;5999	:;5999
du ss us W	: @9 h	;95A99	;95A99
du ss us WW	: =9 h	==5999	=95999

=7;7AOz t zzv v t vt QP

brQP J_r x z br x HbrSh5z J 1brQP5brNP2

g v5zvz J_r AF5F :5;9Hg 5vt x J_r A; 95EB

V 5vt v J:5;B Vv J:5;B :=5F J:D5=DB N

M x s vx x x x x s ss ysu :5;9 x x xs vx u u vx u s xux 95DA x x xs vx y u s x s usv7Mux ysu x x s x x yus x xu ux s u yz s x u xyu x vx us x s x x z x s sx agSUd7P x vx x x x x yus x s s x z ux s z ux s u 7

ex xs s s x ss x :@ v x x x D=D5=; g5 t s vx :7.99 g s x s x s s s x7 d z vx := v x s x f 5usv l @B@59 g5 s ux vx :; v x s x @;D5@9 g7d z x s s x x us s xs u s u x 5 ux yxus x u v u vx z s s x v x s x u x 7

Ptx z	e 8 t	g v zvz 1h2	g vt x 1h2	Vvt v 1N2
S sv s	:=8:@	D=D5=;	@B@59	:C5=CA
Yux x x u	:=8:@	D=D5=;	@B@59	:C5=CA
ds s Yux	:; 8:;	C:D5AB	@;D5@9	:C5=CA
du ss us W	:=8:@	D=D5=;	@B@59	:C5=CA
du ss us WW	:=8:@	D=D5=;	@B@59	:C5=CA

ax v s z s s x x 5u x s u s x x ;B5;M5 s u x vx u u u u s x x ;C5D M7cx s s xs z x Zaae x xu s xx s vx u x x7O xu s x x v x x u s t x x xu u xus uG x xs xs s u s x u xu u s t 7

Ost x s x T:k;k;6W5 v u 5u xu xs vx @ ;7a s s x x xs s s s 5 x xv ux xs s x t ux5u xu x ys s vx st s x5 u 5 su x sv s x s s7e s x x x y s x vx x vx vx u v u s x x vx u us xv us u zx xs s x vx x su x 7

Px xFcQMYUkMcQdUdeQZ PQac_PfOQcQdUde_OMcQMQ^QcSUQUQYQOecUOQPU dfcdQcQSQ^QcMNUYQPQeUd d_YMc aQ^ecf O_^dfZ ac_acUf MY O_Zf^QUaQcUWZ 5VfPQef YeUZUd

Ptx z	e	Y z QP 1 2	ezv z P 1 ; 2	Ptxz z QP 1. 2
S sv s	@	; 9:	@	95B=A
Yux x x u	B	=:B	@	95BBA
ds s Yux	;	E9	@	95B:A
du s s us UW	=	:@E	@	95B;C
du s s us UWW	A	; A;	@	95B=D

O u xx PO u v x s s xs x x x s s xu s s s x u v s s u x x vx s x7 Wx yus xs z x x s s s x s xx5 st s x 7Pxu xu s xs u xu ys s y u x vx x x x t s u s x ysux s v s x s s xs u u u v x vx x s s x x s x7

=7;7B P v z NP v x t zt z

Ptx z	V z 8 t z 1N2	VbPe 1N2	b v v v 1 i 2	Ptu v v v 1 ; 2
S sv s	@@5DA	@@5DA	=9	M = :B4^:B4aQ:B
Yux x x u	C=5B@;	C=5B@;	A9	M = =A4^=A4aQ:B
ds s Yux	; ; 59E;	; ; 59E;	:A	M = :B4^:B4aQ:B
du s s us UW	::5CD=	=B5D; :	; A	M = :B4^:B4aQ:B
du s s us UWW	AD5E:=	AA5;=:	@9	M = ; A4^; A4aQ:B

O u xx x 6 st zx x s 5aOd6 st zx x s st zx x s 6 u vx u x x s yxus x z xs vx us u vx ; 9 7Ys du s s us UWx s us x u u x yxus x v x ux x x s x7dx xs s ust MOj MNj M 95B8: g5u x u v u vx xu x5 x s s vx x x x s x7

Ys z sv s s s vx s x xu vx :B ; x ys x5 x aQ7Ys ux 5ys x x x s =A ; 5 s aQ s x :B ; 7Ys du s s us UW5u u x x s x 5aOd u u u xs s :B ; 7Ys du s s us UW5ys x x x s ; A ; 5 s aQ s x :B ; 7

a x x s x s x x aOd u vx s x s s s x x u u u 7Z s szx x x x zx u xs s x xs u s s x sux u u s s s xs s vx v x s xF=9 h s z sv s5A9 h s ux 5:A h s s s vx 5; A h s du s s us UW @9 h s du s s us UW7Mu xs s s x y u s s x x v u s vx x xs s s s vx x su s x s yxus su v7

Ptx z	Ptxz z z 1. 2	Ptxz z bPe 1. 2	Ptxz z v v v 1. 2	Y z 8 1 2
S sv s	95BC@	95BC@	95BC@	; 9
Yux x x u	95A:@	95A:@	95A:@	; 9

Ptx z	Ptxz z z 1. 2	Ptxz z bPe 1. 2	Ptxz z v v v 1. 2	Y z 8 1 2
ds s Yux	95==C	95==C	95==C	; 9
du s s us W	95D9	95AB;	95AB;	; 9
du s s us WW	95ACB	95A@9	95ACB	; 9

Osvx x vx x x usu s x x s s x s x x su x vx u x 5 s x xs us x u s yxus x 7Y s y s s xxu s xu x x vx :5A. x 7O u s s x x z x us x t s x x v t s x x x x s s s s v u vx x xs x y su5 s z x s x x usv 7

Ys x vx xs s s xux s x s u u u 5u s vs sv s xz z vx s x s x s xu x 7a xu x x xu ux vx x vx x s s su x7O x x v x u v u s x x vx s s s s s xs s t x suux u s t x5 xzs xs u su x u x vx s zx x xu yux x vx u xu s x7

a xu s s su x 5 x xu s xs5u s xs aQ xu s s vxyxu s s x x s7 dx s s xs x x x x x s s s xs s x x s ux s x x vx x x7 Z s us x x uxv x vx u vx yus x u u u x x us x y s x s x v x xs s t us5v us PO s v us x7

=7;7Ce vt zt z z z v ut z

Ptx z	R tt 1i 2	b bPe 1 i 2	R tu t e: 1i 2	Q t t t b Sh 1 2
S sv s	B959	=959	A@59	; 59; 9;
Yux x x u	:9959	A959	E959	; 5E9B
ds s Yux	=959	:A59	; C59	; 5C; C
du s s us W	A959	; A59	@A59	; 5; :C=
du s s us WW	CA59	=C5A	BC5A	; 59BB:
fafNY	**=:B59**	**:BD8B**	**; E=5B**	**; 5=D9**

U d:5su s vx 6yx 6y ys 7Mvs u xs vx vx us us x s s x s s x x vx E9. 5 s s vs x vx u u x x vx E9. 7Q x z s s s vx =:A h x x z s st s vx ; D=5A h s v u x7P s s vx v x s x x yxus x s s x x x us u s s v x x z s s s s s s x x s y s us vx xyx s7

Ys yxus x s s s x x s v s s u s x ; 59; 9; ; 5C; C x5 x s v s6 s x7 P x s xs x x x yus s x s s 5 s s s xs x s x u x7a x xs aOd x x zx s xs y vx us us x8vx us us x s t s x x s u u x us x7

NZd s xz xs s x x5 x x s x5 u x s xs vx us us x7 aOd xs xs s u x s t v xu ss5s QZdu v xs s x xs s u v u s u us7a xu x vx x x s s5 x x su x s s x ys s vx u s vs vx s u 7Y s xs x us s ts x x x x u s x s s s vx v u x7

Uus us xs x xs xs s x u v x x z s ss y s ux7P s s x s xs s u us x5 v t s x us us ts x s xx x aOd s vx us us x7Px us us xs x ux x xs us s7U s y s u5QZd u s vs us us xs v x xs s t us7

U d;5 x x z s ss x xs aOd sux xs 5 vs x z s ^ZO x x x s s s u P P DA. s vs x vx u u DA. 7Q x z s st s x s s x x ;BC5CA h 7P yx x s v x ux s x x xyxu s s s xs u z us x x z s s ss xyxu vx us us s us x u s 7

=7;7Dftu 5 zv 5 t t z v vt

Rxus x s s t u vx s s s s vx x s s x xu x x PO MO5 st vx x ys s5 s s x u us 7a xu s vx x ys s x s s xx s x vx xs x x x s s vx s xs v x sv t x vx x x yxu x s7cxu xu s xs x x u s s x xs xs s v s vx xs u v vx st s x s x x x x 7

cs x x v x 5 u x x s ux5us us x x xu s x x u v u s x x vx xu x xz s x x vx xzs x s s s xu x s s x7O s xs xzs x s xs s s s x t s x7 a xu x s s x x PO5MO u us u v s x u s xu s s s x u x x xs s xx 7

O s xs x z us s x x v u s Rg5 x x z s us us s ts x x5 vx us us xs us x u u t t v xu s u x xs s7f u u vx s s vxv us x x s xs u x vx us v s7 O u x us s u vx su vs x s xs s y u s vx vxu s x5 v us vx s s xs x z us7

Ps x x xz s x x s s x ux x u u s s s x x5u vx yus xs xu s x x 5 x svx s vx y u s x7 dx s xs s s s s x 5 vx z s s v yus s s x s x s s s x 7 Muux s x s x x s vx s x5 s xu s x xu us vx vx x u vx suux s s xs s v s s7

=7;7EYvt xzv v 5 v t xz z z t z z

Y u s x vx u u x x x x y s ux u s x x u x x vx s x su x 5u x5 u x5 ux x5 y s x s s 7 Uus us x x s us x x x x x x s x s x usv vx x x vx x x5 x u s vx x s x7Mus xs s xs s x s xs v x s x x x vx x su s x s s x 7

Mu x xxs xs s u z x s xs x s v x s 5 s 5 s svs5 s s x vx x xs s u s x v s x x s s7d x vx vx x x sx u s t u s 5u xx vx y s x sv x s x v x u v s s x x ux7O su x x x s x v yx x s s x x s xs u zs s ux7

d xs s x ;BD vx s7Y u s x s s x s xs su x u v x s s xs u s xs s vx xu x7Z s x s x x x vx xs s u ux s x su x 5 s suux x s x zs xs s x s xx x s x7R s xs ust xu s xus us vx x vx x vx x x x x x x y sz x s x x 7

f s x x x s x s x x vx us v s x xs s x st x5u xx x x s t s x x su s xs u s s s u vx 7Qu s x x x x xu ux us xs s xx x ux7 ax x s x x s x x x v s ux x xu ux x s x xus u x s s x5u s s xs y u x xx x x vx u u x s x s x7

Uu xx usv s xs s x x suux x x7O suux s x xu s x x x xs xs s us us x u x vx s xs x x uxG zs s xs x s s s s x x s s y vx u vx s usv 7^ x xs xs s u s s vx s u y s u s 7

U s x x s vx suux s u x x x s s x u u s x x x x7d x x vx s x s x x syx x x v x s x yx x x x s u s x7Z s us x x vx z s s5 vx yus xs st us x vx x su s x s s t x7Y u s x vx s v yus y u xs x x x x7

=7;7F b z xz vt x t z t zt x t vt

Ptx z	Pt tv t z z 1 i 2	f v v	Qzu 1 =8 2	dtv x
S sv s	BC5E99	d	A5D=D	P^A9
Yux x x u	:;A5D99	Z t u	:95D:C	P^BA
ds s Yux	=B599	d	=59EA	P^=;
du s s us UW	B;5E99	d	A5@9D	P^@9
du s s us UWW	DC5E99	Z t u	C5AAD	P^A9

d x u u x x vx x vx us v s sx 6s s5u us su s x ux s x x s s s x vx BC5E5 :;A5D5=B595B;5E DC5E h7d x x x xz s x s s s vx us x u sv s s x7d s x x s x us su v x s x5 s s s x vx x vx x vx s x us us s x s us x 7

Y s v s us s x x x x x s t x vx x s s x vx x x 5 s xs s s x x s x x x x7P t s5u x vx us x x x x x x x x v s s s xs s y u s7du x s vx u s u xs s v u x us x u x x us x s vx us v s7

O u xx x s z s y u x vx x s s x5y s x5sx x5u x s x s v s s xu x s u x x xs x 5 s us xs x vx s s x yx x v s ux7 M s s xs s xz xs s vxt x x s x7O x y u xs s s v x vx vxt x x s s s x 5 s xu x s s x vx x s x x vx v t s x y s us7

Qzu v J br z vt 81:5C= Qz tf2HQz tf J BB6 AB J :9X

Ys z sv s5vxt x x BC3E 8::5B=l A5D=D =8 Gs ux 5:; A5D 8::5B=l :95D:C =8 7Muxxs x s x u v ux s =59EA =8 x s s vx 5A5@9D =8 x du s s us UW C5AAD =8 x du s s us UW7 Ps x xx s x ux x s x su v x 5v u x vx v s x x x v t x x s x7

ex x s s vx x x xz s s u s u5u x x AA z svx O5 s x vx us u x x @A z svx O7R u s xs s x x s vx s u x x x s us v ux x xs usv x x7 Z s szx x x x zx u s x s x y s v y s u5 ys s s u x u y 5 z s s s v x vx y u s x s x x ux7

M x s xs x xu us s yxus x x x xs s s u u vxv us 5 s s x x s s x us s7a x xs x xu us x s s s v x x xs x us dO_a x x s s s us x x x x zx uG v x s xs xu s s x s x xs s vx us su x u x x xu ux s x xu s x 5vx u x sv vx xz x s x vx y u s x7

e s xx x v s ux x x s x x u x s x ys s vx z x vx x s x xus us7Pxz s xs s x x su s x u s s7_ xs x xt x s s x s s xz x x x x s x x x s xG z us s z x 5 u u s s s us xs s xx xz s x x s s xs s s t 7

=7;79 Oz t vt t zvz t z v

N x s xs s x s s xs x vx s x x s x5 u dc Q^ :; D=:6:F; 9:C5 u s x s s ss u xu x s ust x7 Ys x z ts s dR5 x y x x u xyu x vx s x s s s 5ze5 s s vx u t vx sx 5 7O xyu x x x x u x vx usu s x s x x xu s x x s s x s s x s x s x x 7

ex x s s x x s s vx usu sv s s x x 6:A z svx O7ex x s x x s x s x xz s ;; z svx O s z sv s5; 9 z svx O s ux u :D z svx O s s s vx 7P yx x x x vx x x s s s x x s u s vx usu 5 v x v yx x x u s x x xz x 7

h J Nr t HUrf J f hHUrh J 95==A h

Ur t J Urf 4 UrhHbrvt v J Ur t 1fr 6 frz28:7999

P tx z	f 1i 8 = X2	1:8 2	fr 1 txz P2	Vvtx t z zv t z t xz vt v
S sv s	:59A	9509	;;	M x s ys s x s x

Px xFcQMYUkMcQdUdeQZ PQac_PfOQcQdUde_OMcQMQ^QcSUQUQYQOecUDQPU dfcdQcQSQ^QcMNUYQPQeUd_YMcaQ^ecf O_^dfZ ac_acUf MYO_Zf^QUaQcUWZ5VfPQefYeUZUd

Ptx z	f 1i 8 =X2	1:8 2	fr 1 txz P2	Vvtx t z zv t z t xz vt v
				x y s s
Yux x x u	95AA	95A9	;9	M x s xv x
ds s Yux	:59A	95C9	:D	M x s ys s x s x x y s s
du s s us UW	:59A	95C9	;9	M x s ys s x s x x y s s
du s s us UWU	:59A	95C9	;9	M x s ys s x s x x y s s

Ptx z	Urf 1i 8X2	Urh 1i 8X2	Ur t 1i 8X2	brvt v 1 i 2
S sv s	:7@EB5;A9	===5BA	:7D;E5@A	BC5BDD
Yux x x u	;7A@@5E=9	CC;5C==	=7=:C5BB@	::B5:D
ds s Yux	DE=5AA9	:ED5EB@	:79E;5A:@	=B59A=
du s s us UW	:7=AD5EB	=9;5@;A	:7BB95B;:	AD5;;
du s s us UWU	;7.B95E99	@D:5B9	;7B@;59B9	E;5@C;

ax z sv s5g l @CA = l :7@;A =7cx s Tpe l :59A :7@;A l :7@EB5;A9 h 8W Tpg l 95==@ 95C9 :7@;A l ===5BA h 8W7O xyux s x x:7D;E5@A h 8W5s apusu l :7D;E5@A =C8:7999 l BC5BDD h 7

ax ux 5g l :7;A95AD =5C l @7B;C5@B =7O xyux z ts x x 195AA 4 95==@ 95A92 @7B;C5@B l =7=:C5BB@h 8W7P yx x s vx x x s s vx =A Wu v ux s xux s vx usu vx::B5:D h 7ax ss vx 5v yx x s vx x x s s x x == W5s x ux x v s u vx u s s x x =A W7

Mux usu yus x s xzs s v x zx x s us s5 s yx x u z ts 5 u t vx sx s u s vx us x7Q x x v ux s u s x us s usv us su s xs sss x vx s7 Q x z s s ssx x usu s s x s s 5 t s u s u xz vx s x7

=7;7:W vt zt z z z z vz t tz u t v t v

Ps x x vx x s x ^;98:; l ;7E;@W x P:; l :D@ x7^;98:; x s s v yx x x ys s vx x x s s x s s vx xyx s vx ;9 z svx O5 x x vxy vx sz x x vx:; z svx O7Mux x s vs x sx usu x u s s x v u vx x s x x zus y s s s xs v u x y s ux7

ax xz s s x u s x x x s s s x5 x x s s xv s z s s s s s 7 S sv s xs s xz s :9 x8 5A x8 s s s sG ux u x5D x8 5A x8 s s s sG s s vx 5:; x8 5B x8 s s s s7 U x x xs s x x s x xv x v st x 7 Mux xs x x x vx x s s x s x x s 5 xz s vx x x s s7

r tzJ r r t 8:CEHfrzv J fr zx 4 r t z 1fr t 6 fr zx 2

_rzv J _;98:; 4 1frzv 6;92 Q:;Hcr J;A Ur t _rzv 8:7999

Ptx z	b t t	f t 8 zx 1 txz P2	f zv t z 1 txz P2	_ zv t z 1X z2
S sv s	:9 8 GA x8 s 7	;; 8:D	:E5E9	;7CCA59@D
Yux x x u	D 8 GA x8 s 7	;98:B	:B5EA;	;7=B=5,=D
ds s Yux	:; 8 GB x8 s 7	:D8:@	:A5C:@	;7.=A5@,E
du s s us W	D 8 GA x8 s 7	;98:B	:B5EA;	;7=B=5,=D
du s s us WW	D 8 GA x8 s 7	;98:B	:B5EA;	;7=B=5,=D

ex x s s xu s x s x x vx s s x s x ux x :BD x s x s s s 7Q x z s x x s v u ysu s x vx u s x5vx s xux xv ux xs x x s x s x x vx s u s ^pxu 7Z x x xs x x x s xv x x x s y u s xs x s x s s u x s x xs s s7

Ys z sv s5 x x s s xu s x s x x :D 4 1;; 6 :D2 A98:BD l :E5E9@CB z svx O7^pxu l ;7E;@4 1:E5E9@CB 6;92 :D@l ;7CCA59@CB:E W x7Q x z s s x s v xu F;@ :7D;E5@A ;7CCA59@CB:E 8:7999 l :;:7D@5;ECB h 8s 7

Ys ux u 5 x x s s xu s x s x x :B 4 1;9 6 :B2 @98:BD l :B5EA;=D: z svx O5 s ^pxu l ;7=B=5,=D9EA W x7 Ys s s vx 5epxu l :@4 1:D 6 :@2 C;8:BD l :A5C:@,DB z svx O5 s ^pxu l ;7.=A5@,DAC: W x7Rxus x s s x x x us s u u xyu x T usv 7

Ptx z	c vt v t 1i 8t 2	Zt t z z 1i 8t 2	c z 1i 8t 2	P zv v 1i 8;t 2
S sv s	:;:7D@5=	B79E;59B	:;C7E==5E	;AB5A:
Yux x x u	:DD7C95=9	E7@9D5A;	:EC7ACD5D;	:A95@C
ds s Yux	AA7EE:5B@	;7CEE5AD	AD7CE:5,=	;@=5@@
du s s us W	E@7.DB5B=	@7C9E5==	ED7DEA5EB	;BE5@
du s s us WW	:@E7DA:5B=	C7@E;5AD	:AC7=@@5,:	;:D5@@
fafNY	**C:979A:5==**	**=97B9;59D**	**CA97BA=5=F**	**6**

Zs s xs vx x vx A. xyxu s v yx x s v x x x z s s vx us x x x z s x us s zx x s x v x s vx us u 7Muxs s x x z x x x u s bpzx s x vx s xs s dO_a7^ x svs zs us vs s x vx vx A. s u x xu u x u y vs x x z s x us s s u v u s y s us7

O x s u v ux s u x x xu ux s s x vx v x s x s x d:7 ax d; x s xs s suxxs x x z x x us s s5 s dO_a x x =5A9 x s x x x x5 x s v :D=79:;5;DC h 8s 7M yx5 u s s s x y s x v yus syx x x vx x x s x u x us s7

=7;7; N t t zt z t t vz t z xz v t z

U xz u v u x s s5 s u s us s x x s x s s u s x v xu v y s u7d us us ts x s s s s s vx x x s vx s x vx us us x7P s s zx xs sux x x5x x z s x s s xs s su v t v xu s5 v x vx y u s x x 7

U x s x x u ux x x s s x vxus v u s5ts x s s x x u s s s sz s s vx us us x7P yx x s x x x s s v x xs s t us7d x u v xs s us xs usv vx x x s s x s t x ts x x y u s vx us x x x s7

Ys vxyxu s vx s xs sz vx z s s5 xu x us x xs s x u xu s x syxu s 7 _ xs u s vs s QZd t x s s s s vx xu x7cxu xs y u s x x x x xs s s x v x sv xu x s vx xu xu s x s xu s x x 7

M s s xs x us s x x ux x xs usv 5 x x s s vx x u v x x7dx s x x vx y s u s x s xx sv x s x x u y 7U xz s xs x s s s s x x z x x xu ux s x x z x x ux x x s xs x y s x x x x xs x x s s x7

=7=P z z t z t z z

Q s s xs x x x s s x5 s vs s vx 9D7:97;9;B7gs x ys s egM5egM s x u egM x vx s x v u 7O vx us u x x A5=@=@ x 8Qf c7O x u v xs s xs s s t y s ux5s us 5s x x ux5s su v s x u xux s x x x s 7

=7=7e v t xz z z t 6e:

Pt	St t fhN1z2	fhN1z2	P fhN1z2
:7_t x xs s x s s xs x x	9599	9599	9599
;7M z s xs s	9599	9599	9599
=7a xu s x s x s x us	:D:7A99599	=D7:A599	;:E7B:A599
@7U x s vx t s s	BCA7;9=599	:@7CE;5B=	D:B7EEA5B=
A7M x u x x	DD7@=C5BB	:D7==C5;B	:9B7CC@5E;
B7a t x x z ux x x	9599	9599	9599
C7Z s s vx t zx x x s	;:@7CA5CA	@@7ECB5E:	;AE7A;5BB
fafNYTR_RdNY	**:7BF7=:C5A:**	**;A=7;;:5E9**	**:7A9;7B=E5;:**

Px xFcQMYUkMcQdUdeQZ PQac_PfOQcQdUde_OMcQMQ^QcSUQUQYQOecUOQPU dfcdQcQSQ^QcMNUYQPQeUd_YMc aQ^ecf O_^dfZ ac_acUf MYO_Zf^QUaQcUWZ5VfPQefYeUZUd

=7=7, e v t xz z z t 6e;

Pt	St t fhN1z2	fhN1z2	P fhN1z2
:7_t x xs s x s s xs x x	9599	9599	9599
;7M z s xs s	9599	9599	9599
=7a xu s x s x s x us	:D:7A99599	=D7:A599	;:E7B:A599
@7U x s vx ts s	:7@EC7=:=599	=:@7@=A5C=	:7D::7C@D5C=
A7M x u x x	:O@7D;E5DC	=A7B9:5AC	;:97@=:5@@
B7a tx x z ux x x	9599	9599	9599
C7Z s s vx t zx x x s	@.E7C9=5,A	DD7.=C5BD	A9C7D@95E=
fafNYTR_RdNY	**;7,D=7=AC5;**	**ADC7,EF5FE**	**;7DAF7C=C59**

=7=7=V z t xz ut t v t z xz v v 6 t

P z t e:	St t fhN1z2	fhN1z2	P fhN1z2
@7.O u s s	BE7,:D599	:@7A=A5CD	D=7CA=5CD
@7,Z s s x5xu s x x x z ux y u s x	=;7=B9599	B7CEA5B9	=E7.AA5B9
@7=f s x5xu s x x x z ux y u s x us x xux s s	AC=7B;A599	:;97@B:5,A	BE@79DB5,A
e_eMY OMale_Y@	BCA7,9=599	:@.7CE;5B=	D:B7EEA5B=
P s Fu u 6 s	:9:7ACD599	;:7==:5=D	:;;7E9E5=D

U x s vx ts s x s s us x vx u u ss vx s xu s x x vx y s xs 7 d u x vx x x5 s xx x vx ust 5 xz s xs st 5 xzs xs s s s xu x s s x xs s x yxus x usv x7 Os s x u x s x u ux x ;BD vx s u u yz s x us x vx u x x us x7

O x x x x xu s x5s x s x us5 uxv vx su x5 s szx x y s x zs s x s x t xu s 7Z s s vx t zx u x x x v x x x x s xs y s us v u ys s vx xu s x x x us x xyxu vxy xGx x x x s us su s x x zx ux x s x7

=7=7AS t t zt v u t uz z v t

Pt z z e:	St t fhN1z2	fhN1z2	P fhN1z2
gs s x s s	:7.AE7=:B5@	;@=7,;:5D9	:7@9;7A=D5,:
O x x x z t x	E@97A;=5=9	:EC7A9E5DE	:7.=D79==5E

Pt z z e:	St t fhN1z2	fhN1z2	P fhN1z2
O x x xx z t x	;:D7CE=5:	@A7C::5E:	;B@7A9A59;
R s s x x s t st s	DBB7=CD5DD	:D:7E=E5AB	:79@D7=:D5@@
O t x x ss	;E;7E=C5A=	B:7;D;5;@	=A@7;:E5CC

:7A9;7B=E5;:J:79AE7=:E5AA4=BA7;:F5DDz5 v fhN

=BA7;:F5DDJ;CA7B9B59;4EF7D:A5DBz5 v fhN

O t s x ss u vx u x x xx z t x s xs x z t s xsu x s vx s x s t st 7 R s s xs x s t st s x x xu s s s u s s xs s s x z t s7U d:5 s xs x z t s xsu x s x x DE7C:@5CA x u egM5s u x x xx z t x ;B@7A9A59; x u egM7

a sy s x xu u x vx us v s x x :7997999 Qfc8Zh7M us us su s vx 95@C@99 Zh5 x s :B;7:@9 Qfc5 x xu DBB7=CD5DD x ys s egM s u vx us u 7O x s egM syx x s s x x x vx s s v u5x s v s u s vx :79@D7=:D5@@ x7

ax d;5y s s xs x s t st s x x E=:7BD95AC x u egM5s u t s x x x :7D:C7EAA5A= x7 O s s s s xs s v u u x5us su s xs x z t s sy xu yu7_ us su s x MO s s x s xs s s s us su s xs y s us x z t s7

=7AS xt z t zt z vt z z z t z xz z z t

Q z	dz z z t z 8 z z t	N vt z
U x t ux	TS 7E9C8;9:B5u v yus x s ust x	d u s dR5 ux s 5 v us 5vx zx x s 7
R s s x	_ZQ 7:9BB8;9;BGS v u s M u cQd x x s t ux	Os su s 5 us x5u x s v us 7
U ss x xu ux	UC6;9::5 v yus _ v 7EAE8;9;=	O u x5 xu 5xzs x s s s z s s7
Uus x	U:=6;9:A5 u v yus x _ v 7 :C98;9;=	U xz s xs x5u u s s5 xz s z s s7
ds u s x us	dc Q^ :;D=:6:F;9:CG^MF;9;;Gu xu x OE: s ust x	a x vx s x x s x7
Q x z x x us	Z u 99:6;9;;5s ts s _ v 7 :B8;9;=	N s x x zx u x z s x u x u7
ax y s s avO	dc Q^ :@D;AG x s dc Q^ :@A::	ax y s s x x s x y s s s u x vx x s x7
d u	dc Q^ :EE9Gdc Q^ :EE:5u s x x x s s x s ust x	Ns x x xu s su x s s x x vx x x7

Px xFcQMYUkMcQdUdeQZ PQac_PfOQcQdUde_OMcQMQ^QcSUQUQYQOecUDQPU dfcdQcQSQ^QcMNUYQPQeUd_YMcaQ^ecf O_^dfZ ac_acUf MY O_Zf^QUaQcUWZ5VfPQefYeUZUd

Q z	dz z z t z 8 z z t	N vt z
dxu s x s ux v	a ::D8:6; 9; A5s ts _ v 7 ; BC8; 9; A	M s s x5suux 5 xu s u sv x x x7
csv s x v u x	agSUd5V cx xs u Ox x5O s Q xs s	d s s x s x v u x sv s x s x7

M us xs xz x x s x x s s s s s x x xF x x x su x 5 us x x xu u us x x ux sx 6s s xz s x ss x x x7U x x x z ts x s x t x s vxu s s x x u 5 s dO_a x x x x s s O_a u s 7O us s u s s x x s x s x x5 s 5 u x x5 xu x t x x7

=ZBT t v xz zt t z t z z

P s s vx x x s x x x :; 5v x us x B x x xu x7d v vx yx st s x vx zx x s s s x svx xu su s x7U x svs vx x x s x5 xzs xs x us uxv x x vx ys s s x x x 5s x xu s x x z s s s x @6E7

Q xu s x usv x s x zs s x y s s s s x x5u s s xs z s x u t ux7 P s s ys x vx x xu x s s x s x s x x x5 s v s x yxus y 7Z s szx x 5 s xs y s xs x u s x ux x :; 7

Nv t z 8 z t t	b t z z z t z	P
dR vx zx x s	ax svs xu su s s	R vs x s xs x x s v us 7
d v vx x x	Y s :	c v us z syux v zx x u5 s us 7
M x v u x s vx s s x	Y x :6;	_ zs s xs v u x s s u zx xs uxv 7
a uxv vx su x	Y x :6=	O su s xs u s 5t x u 7
a xu x u vx s vx x xu x	Y x :6=	P u x s s x us vx x xu x s x sv s x7
gx yus x x us s xu	Y s =	O x u s v u x s x vx x xu x7
O u 5 s xu s x x	Y x @6E 6 B	d 5 s xx5 s s Rg5 us x x x ux7
M x s x us v zx x	Y x @6E	f s xs xs s u s s u us s 7
a tx5 x x y u x u vx x	Ys y s s xs x xu x s s s :;	ex s x xz s s5 xvs x5 x u vx x sv s s7

Nv t z8z t t	b t z z z t z	P
Z s szx x 5 s x t u s x	Y x:6:;	f s xs z x y u y s us 5 s s x7

d uux xs x z us x xFvx s xs y vx u 5 xzs xs 5 s u 5 s xs u u x 5 ss xs v x xu s x x 5 xs s xs su v x ux5 txxxxu ux v s ux5 u yz s xs u x x s xs y u ss xz s s7U x x x xux s x us s ss x x x x x zs xs s u s 5u x s s xs u u x x s xs s x s z s s7

A7N t t vz t z v 6zv vz

AZ Ptx xz t t t x t t xz z z t

ax svs vx xyx s x x vx ;9 vx s 7M s s u s s sux xs u u usv 5sux s x u x u sux s v vx xz s x uss s x 7U x s ss x x x s s s vx u x x x vx x s xGs x s t st x x s vx y s s x5 x x s s7

N s x x zx u x u x x u z u5 x DZCB9 x s x s x7a v u s x x vx x ss agSUd x yxus x u yz s x5 s u x x x s s y x s s yxus x vx x vx usv s7d us xs x x s s uux xs x s s s v u x s u 7

Uv us vx v u x x x svs vx xyx s s z s x x us u s us v x x x z s s ss vx xyx s ;9 s 7U s s s y s u s s x s us x s s x s vx vxz svs x s v u x y s ux vx 95A. s s 5 ux s v u s s v xs7 Ox x xs x us u x vx usv s vxz svs x u s x7

d: d; x s s x x s s 5u u yz s x vx x x5 x vx us x 7P yx x s vx v u x x x t s s us xs z ux z ts x x x s d:7O yz s s MO5u x 5 s xs x y s s su s s xyxu x v u x t s yxus ux s 7

AZ; h z tu t v t vz t xz txt t z

Q s s xs us s s s x st s x x x x xs xu s x x vx su x s s x x s x s usv s5 y z5 xu s 5 s s svs7 dx s s xs s xyxu x x s s y u s 5 s 5 z s x v t s 5 xu s x x ux xz s x x7^ x xu s xs s xv x x z us s s s u su xs x x s s s s xu s xs u s s7

ex x s x v us x xv u x xs s s xx s v x u s s szx x x u s u x x us 7dx s xs s x s xs x s s s v x vxzs s x vx sx s x xu s x x 7NZd aOd xs s y u s xs sys s v x x u sv Gx s s xs x x t u s xs x s x vx s xs vx s x s x7

U x xux5 s s x sx 6s s y u xs s u u v x x s x s st x u uu vx vxz s x7e s xx x v s ux x x s xu x s z x 5s s s vx vxz s x x x x su s s z s s7d x vx s s s x s xs s xu x vx vxt x x s s x s x xs xu s s v s x x xs s x s 7

gs s svs u s x x x vx y s x s 7Z s xs s x u x vx s u s x5 s us x vx suux x su s xs s x s s tx x7Qu s x x x x xu ux x s s xs s x s xx vx u zx x xu s s7Qs s x vx x s x x v u x s s x7

Stv xz v	Rzv u	Zt t z t t
ex x s v us x	cxv ux xs x Rg u s xs ts x	gx s x5 s vx x u 5 s xz x x s x x us7
Uz x 8vxz s x	Myxu s xs s xx y s xs z x x suux x	U s x5 xu x s z x 5u xu s x x su s x u s s7
gs 8 s svs	d u s xs y s u	M u s x s s s xs zx x x vx s 7
a xu s x x	as vx xs s x s s x s	Qs s 5us us x svxu s x s s xs x su s s x 7
Px us us s yx ux	d s x vxu s s	Qu x s s x xu u v s x PO5MO u us 7
U x x xs x x x	_ xs x s s x s us x xu ux	M 6 s s x5 xu s u u x xu xu s x u s s7

Zs x s us x x s x s s s x x x7U x x xs s x x s s x s x s xs y s 5x s x s xs5 vxzs s x vx sx 5 s s s xx y u s xs xu 7P s x x x x x x z ux x x x5u vx x s s x x x xz s xs xus us x xu us s xs x s y u s s x7

AZ=e t t t z t zt v t t

Q x z s x xu us x x s s u t s s s s x s yxus x usv 7d x x s u u x x s s x s s x x z us5 s xzs s u x xs s t us s s x s u us vx su vs x7Ox x u u s s t y xs s ux s s x xu us u s u z u y x u ust vx v t x s s x usv 7

ax s xs x us5 su v x sx 6s s x x vx s s t x vx x x 7d x x u sv s s x s xs s 5 s xz s x x x u x s u ux x xs vx us x7R u x vx xu x s x x5sx x5y s x u x s x s x s v s s x s xs s u u y u s s s s x 7

O u x x x ux u x7M x s xs u s s x x x xs x x xs u s s5 u x z u u 7Y u s x x x s s xs y s x vx s s x s x s xs x x uxG s yx vx us v s x xs xs s v sx x x 7

Y u s x s st su v x zs xs s u x s s xs u u x 5 x s s xs x u x s s x s 7U x x x t u xs s suux x u vx zx s7M s s xs xu s x x s xs s x x vx s x s x u s v s xx x vx x su s x7

AZAe z tu t zt v t t xz zx

dx u x x zx u x x s us usv u y u x xv us ss s7U x s s x x st s xs y u s 5u y x u s xs x x z x xzx x st x sux xs s t ux7Muux s x u x t ux x x u v s vx su s xs x x z x v x vx ss 7

Z s x su x s yus syx x s x usv x x x u ux xs s x x x xx x ux7 _zs s xs x xu x x xs s s xs s z 5 sy s x x s x x x t x7U x s s x x s x x s s s xs s x x s x s x s x s x u s x u s x7

a v u s y sus s x u ys s s vx x s s s s x 7cxv ux xs x x x usu s s v us z s s us v u x s s x7Mux v us x x x x s us x s u x s x x u u vx s s s xu s x x u us xv ux x s s s s u s vx zs x s u x7

Px x x v s x x s s u xu s x x s s 7Z v x x5 x s x x su s s s x vx xvs x us x x s s s s u s x xs v 7Os us x x x x x ux x s x s vx x s suuvx s x5 s x x x s u u y z yu xs s x vx x s u x x 7

AZBb x v t bhTVe x z t zt z z z vt

AZB7 Qt z z t t z

Ps x x vx v u x sv s x s s u y agSUdl 6a s u Sx z s us Uy s d x s V cx xs u Ox x5O s Q xs s7Os u xs s x u x x usu x u yz s y x5u ts s vx sv s x agSUdl6dMcMT= vs x x x z ux QcMA7_ z syu x x u vx x u s x x 7

dx s vx usu y x x s x x z u vx xyx s ;9;:5u D7CB9 s s x7Qs u x ts s s ss vx s x s xu G x x s s s v s xst s u xv x s ss usu s s x s s 7 cx x x x z u xz s x x u ux u u s 5s x xs5zx x s x vx x yxus ux s s us x x s s 7

ax s x us x5 u s xs x x =9 z svx5 s s agSUdl x x 6@A z svx5u x s x s d v6 Q 7Z vx s xs x us s v x xs s s x s 7ex z s vx us u agSUdl x x u u s G x y s s s s s us x x vs s vx x xs s PO7^ x x svs zs x s s us z t ysu s ux s x x x x z s us u s s7

agSUdl y xs s x xs x xu us a h u x xx sv s x s v x 5 h 8 ;7Q x z s x s s x x a : 8:79997Usv x xs s s x x s u x x v xu x5v y x xyxu s x5 xz s x

x x sxx 7a v u s ss uxs s ss t x sz xzs xs x x z x 5 xs sv x u x xs s s ys s s vs x x7

bt t z	e:	e;
Ns s vx sv s x 8 x x	agSUd6dMcMT= 8 QcMA	agSUd6dMcMT= 8 QcMA
dx s vx xyx s	D7CB9 x s x s x	D7CB9 x s x s x
Sx x x	R Gd v6Q G=9 z svx	R Gd v6Q G=9 z svx
a x vx z ts x Rg	:@	:B5A.
a x x PO u s s	:@C5@99 h	:=@5@99 h
Usv x x z ts s s	:7AAB5CE: h 8 ; 8s	:7AAB5CE: h 8 ; 8s
a v u x s ssv s xz s x MO	:CC7=; B5; E: h 8s	:AB7A:E5A== h 8s

AZB7; Vtxz zt t t t t

Y t	T utt1i 8 ;2	Q zvt1i 8 ;2	Q t1i 8 ;2	dz zvt t 1i 8 ;2
Us s x	@D5ACD	; @5:E	; =5ECB	95@D=
Rxt s x	DB5B=9	AA5@ED	=95; AE	95DC=
Zs x	:@95AC	DB5B=C	A:5EC@	:5A@A
M x	:@95=DE	C=5; ;	BA5@; =	:5C@@
Zs	:CE5C:E	:9@5@C=	C; 5E; :	; 5=; A
U x	; :; 5@C=	:=:5@AA	CD5; ==	; 5CDA
U x	; 9; 5=; =	:; @5C9:	C@5EB9	; 5BB;
M z	:D; 5C@9	::A5AC=	B@5DAD	; 5=9E
dx x t x	:@@5A@B	DC5BE:	AA5E=	:5BB;
_u t x	:9C5CC9	BB5EAE	=E5C9:	:5:9
^ x t x	C=5A9=	@B5BDC	; B5=:	95BD@
Pxux t x	=C5EB=	:C5=9B	; 95; D;	95=CB
fafNYN_gNY	**:7BBC5DF:**	**F=A5=; ;**	**C9=5F:=**	**:E5BBC**

Usv x xs z ts s ss s x x :7AAB5CE: h 8 ;5y s s v E=@5=; ; h 8 ; u x s v xu s5 B9=5E:= h 8 ; u x s v y s :D5AAB h 8 ; u x s xyxu s s7Usv x xs us su x xs s x x z s s s uvx s x s xs vx sys sG v u s x xu us s s s x u vx x s s x xs5 x x s s x vx x x 7

gs s xs s s s s sv x x x x5 s x x vxux t x7 Muxs s x s s x x us v yx x xx v x v u s s s ux x xs vx us x7 Mu s v yus s xs s s s x x z x v t x5 y s x x s s x x s x7

AZB7= b x v t z t t t z z v t t t vz t

Ptx z	b x v z e: 1 i 8t 2	b x v z e; 1 i 8t 2	b x v z zv vt e: 1 i 8 i t 2
S sv s	=A7C; E5E; @	=: 7A=C5A: D	: 7; 9=59; D
Yux x x u	A@7E: D5; : C	@D7@C@5===	: 7; 9=59; D
ds s Yux	: A7DCE5EBB	: @79: B5BCA	: 7; 9=59; D
du s s us UW	; C7: ; D5; CB	; =7E@A5A;	: 7; 9=59; D
du s s us UWW	@=7BBE5E9B	=D7A@A5DAA	: 7; 9=59; D
fafNY	**: DD7=; C5; F:**	**: BC7B: F5B==**	**: 7; 9=59; E**

a v u s xu yus d: x x s s : 7; 9=59; D h 8 h 8s x s x x z us zx x us vx xyx s7 P yx x xx st x v x usv v x x PO v yx x7 Q x z s x s s x x v t s v u us x u v xu 5t s x x x xs s t us7

ax d; y x x PO s u x vx vx x vx : B5A. 7O x s MO x x s s s x yxus x s s s x 5 u su vx x xs x xs s xyx s us su s 7O s s s s x vx xu s xs s suxxs zx x x sux s x u x u5s yx us x s x x u s st x7

AZB7A O t z z z v t t v t zt vt

S z z z v	e: 1 i 8t 2	e; 1 i 8t 2
a v u x y s us	: CC7=; B5; E:	: AB7A: E5A==
O x xu u x s	: CE79C; 5999	: D=79: ; 5; DC
O v xu v Rg	=E79; : 5ACA	=D7: @A5BC
Q x z x us us s t s x	=@7; A=5@=:	=97C=E5CE@
Q x z x vx us us s us x u	=97EB; 5AB@	; B7; A; 5; A;
U v x xs	: 9E79DC5DB;	: : D7B: @5DBE
Q x z x s s x xs	: 9@79A: 5; DA	DC7B=@5AC;
a x vx us x	=7@=; 5B: C	@7B; : 5@D

Rrv J RrSh5x zv 4 RrORee5v 4 Rr

RrSh J RrSh5x zv 4 Rr vt vt z 4 Rr t z 4 Rr t t

U d:5x x z s y s y u s u v y s u t s x x x =E79; :5ACA 4 =97EB; 5AB@I BE7ED@5=E h 8s 7 P yx x s s s s ux x xs vx :CE79C; h 8s x x x s s v x xs s t us7 Mu x xs y us s ux x v x x us x x x vx =E59D. G s s s v u x8ux x x vx EE59=. x x v us v yx 7

Y s s s s us 5x x z s us us s vx us us s x x x x s s x s u s s s s vx us us x x ux ys x svx 7a x vx x x s vx u z u5u s vs x vx u u s xs s s s t s x G x u x u 6 usvx x s s v s s vsus s xs y s s v yx s vx uxs s s7

Y s xs x us x xs d: x x :9@79A:5; DA h 8s 7 Qs x s x vx x x u x s s s vus s ux x x x us xv s7cxz u x us vx xz s s x x x v u vx sux x y y ux7M s s y s u s s svs zs x v suxs s x x z x s s s y s x vx x t x xyu 7

Ns x x us us x x u v y s u5 s t s x xvx x x z x vx us us x v x xs7a x xs s s vx s x x s s s x x x s s s s x yxus x s s t 5 s xs s y us z s x x vx su vs x s u x 7

Ptx z	b zz t t tt t zt e: 1 i 2	b zz t t tt t zt e; 1 i 2
S sv s	; @5@@E	; : 5A==
Yux x x u	=C5ACA	==59EA
ds s Yux	: 95DB@	E5ABA
du s s us W	: D5AAD	: B5=@@
du s s us WW	; E5DCE	; B5=: B

N s x s x vx s s x x u sv x xu x x s x s x s x x zx us7 gs x x s x vx sy s x s yxus st x Gv yx x x x vx v vx h s s xs s sy s x v yus x x z s s ss s s s v x s x7

ATC N t t t v t t z tu t zt z t t

ATC7 V z z xz t zt

bt t z	V z t xz vt v
ax svs vx xyx s	; 9 s
cs s vx su s s x	A.
Q x z x x xu us v x xs	:5; 9 x 8 h
O x x x x x z x x xu us	; . 8s 5 ux s v u s ;
a x x x z x u t t vx xyx s	95A9 x 8 h u t t
cs vs x x x s u x s s	DA.
O x x x u t t	; . 8s

Px xFcQMYUkMcQdUdeQZ PQac_PfOQcQdUde_OMcQMQ^QcSUQUQYQOecUDQPU dfcdQcQSQ^QcMNUYQPQeUd_YMcaQ^ecf O_^dfZ ac_acUf MYO_Zf^QUaQcUWZ5VfPQefYeUZUd

bt t z	V z t xz vt v
Pxz svs x v u x Rg	95A. 8s 5v s ;
_ x s x x x s s	:5A. v x s ys s egM s :
O x x x s x x x s s	; . 8s
Q x z x s s x xs	Rs s x x s s us u
O vx us u	A5=@=@ x 8Qf c

a x x x z x s x x v x x x x s s x y s us x5 s yx u su s x zs s s x x x svs vx xyx s7O s s s s x x suxs x u vx us x7O u x s vx xyx s x vx x s v x x z s x us s s5 s vs x x x x u t t 7

R s s xs x s t st s x x x vx s s us s vx su x x s x x s x7Qs x x xz s s v x tx xyu vx x s x yxus x s 7O x x z x x s x v x xs s s x x s s vx x s x x x s s7 Q x z s y s us u s s v xu x x z s vx us us s v ts x x s s x vx v s 7

ax x s vx u s uu vx s s x s s xu s x x u v s s vx x u s s x vxus x svs vx xyx s vx ; 9 vx s 5 u v x x s s x x s x x s x7Muxs s x x ux s vx v st s x s x sv s x ts s x u vx u x xzs x u x y s s s 7U x x xs x v us5 x x x vx x ux u st x x s s x t zx vx x s x7

Zx x xs x y s x x s s x us x xu s xs v x vx x x s s5 x vx u x 5 uu sv x z s vx x x x7P s s vx x u s s s xs s x x xs x u ts s s x v x Fvxz svs xs y s us x x s s s x u x s x x zx us s s s x y s us x7

AZC7; P z t t z t z z v z z z v

P z v xz z z t J CA97BA= 8 95EB 95B9 J =DCZDF9 z 8t

P z zv v e: J :9F79EDBEC; :5; 9 J :=97F9B5A= z 8t

Rz z 6 t :	e: 1z 8t 2	e; 1z 8t 2
O u x s s sux s x u x u	=CB7CE9599	=CB7CE9599
O x x z x x xu us x s s v x xs	:=97E9A5@=	:@; 7=:C5D@
P yx x s t s s u x x z x ux	; @A7DD@5AC	; =@7@A; 5B
_ x s x x x s s	:C7=DE5CA	=@7 995E
P yx x s x s v s x s x x x s s	; ; D7@E@5D;	; 997=A:5EC

O x u u x s x x xyx s us u s s x x u x x z x us s s 5 ux s s x v x ysu ux7O x xu u s x vx us v s x x u ux s u xu 7a s x5u s s s

y s uss x x u x u x u x xu u s s t 5 s v yx x s v x v s us s ux vx x xu u s x7

U s :5t zx vx x s x d: u vx x x z s x xu us v x xs vx :=97E9A5@= x x s xs x x s s vx :C7=DE5CA x7 Nx xyu s s z s u s xs s syx x x y u s 5 x x x x 7 P t s xs ss x x s s x s s vx xu x t zx s x x s x7

A7C7= S z z z txt xz z z t

M 9 u vx x s ss7 R R8O y x x s s xs ss s x x5 s y R8W y x x u t s t x xyu s 7U s vx x s s x5v yx x s t s s u x x zx ux x x v s s u x s xs x x s s7R x su s s x us u s x u ysu :81: 4 95 9A2os 7

est x s x s x s u x x vx x s x s y x s s x x ux x v s ux s 7 Q s u vx x x x vx us s x vx x 5 vxz svs x x x s s7 gs s xs ss s x x x x x s sss yus us xv ux x s u y u7

N xz z t t z	a/Z e: 1z 2	S z t t e: 1z 2	a/Z e; 1z 2	S z t t e; 1z 2
:	:C7=DE5CA	; ; D7@E@5D;	=@7.995E	; 997=A:5EC
;	:C7C=C5A@	; =; 7B=B5@	=@7CD; 5, 9	; 9=7EB@5DE
=	:D79E; 5, E	; =B7DA@5@B	=A7@CC5D@	; 9C7B@@5, :
@	:D7@A@5@	; @.7.A95=E	=B7.DC5@9	; : : 7=E: 5A
A	:D7D; =5, ;	; @A7A; A5BB	=B7E: : 5@	; : A7, 9B5ED
B	:E7.EE5BD	; @E7ED: 5CC	=C7B@E5=C	; : E79E; 5EE
C	:E7AD=5BD	; A@7A; 95, ;	=D7@9; 5=A	; ; =79A95@D
D	:E7ECA5=A	; AE7.@, 5AD	=E7.C95@9	; ; C79D95D:
E	; 97=C@5DB	; B=7DA95@	=E7EA=5D:	; =:7.DA5=;
:9	; 97CD; 5=B	; BD7B@A5=;	@97CA; 5DE	; =A7=BA5@
::	; : 7.ED599	; C=7A; D5E@	@.7ABC5E@	; =E7B; ; 5A9
:;	; : 7B; : 5EB	; CD7A9; 5EA	@, 7=EE5=9	; @=7EADD9;
:=	; ; 79A@5@9	; D=7ABE59=	@=7, @C5, E	; @D7=C=5@=
:@	; ; 7@EA5@E	; DD7C; D5E=	@@7: : 5, =	; A; 7DC95, A
:A	; ; 7E@A5@9	; E=7ED@5@	@@7EE@5@D	; AC7@@E5EE
:B	; =7@9@5=:	; EE7==C5, B	@A7DE@5=C	; B; 7: @5, :
:C	; =7DC; 5=E	=9@7CDE5=;	@B7D: ; 5, B	; BB7DB@5@E
:D	; @7=@E5D@	=: 97=@, 5@A	@C7C@D5A9	; C: 7C9; 5@A
:E	; @7D=B5D@	=: A7EED5AB	@D7C9=5@C	; CB7B; E5C;

N xz z ttz	a/Z e: 1z 2	S zt te: 1z 2	a/Z e; 1z 2	S zt te; 1z 2
; 9	; A7===5AD	=; :7CAE5AD	@E7BCC5A@	; D:7B@C5EE

ATC7A Vx vt t vt t vz t

Vx vt	e:	e;	g tz
gM^R8O	:7DEC7; EA5AA	:@:7AA=5=E	x
cUdR8O	:C5:B:	A5AB; B	.
gM^R8W	; 7E@A7B:=5EE	:79C=7; ==5EB	x
cUdR8W	BB5=:BA	:95DEEC	.
cs N8O	; 5@@B; D	:59@=AAE	6
cxu x s x s R8O	B5=D;	:=5C; @9	s
cxu x s x v y u s R8O	A5DC:B	:; 5=BE=	s

Uv us x x s us x s x s x usv y s us vxu s s 7f s xs s xs s v u x xu s x x sx x xu s u t x tx xyu s 7_t xu x x x x x u x x zx u s usv t ux5 s v x s xs x x y vs x s s x ux x xs x us5u xxu u x s v u s s s5 x s vx y 7

ATDN t t v 6z vtv t z

M s s u 6xyusu s x s xs s u x x s x s x x ux s st xF x x z s s ss v s5 us su s xs y s us vx xyx s xv ux xs vx x usu s s ysu z s 7Uv us x vx s s x s x x z x x s s y s vx s usv 7

ax u s st s x x s xs s sux xs xz s t x x ux s 7U x s u egMx x y s s s s xs s v u s s ss s xv ux xs x 5 s x s ys s egM x x y s s u xu yu s s s x xs y s us x z t s7O x x x vx us x x vx us v s s s x s s s s s s s7

Vx vt	e:	e;	g tz
U x x 8 v u x s ss	C7E9E5=B	:C7ABC5=C	x 81Z h 8s 2
U x x 8 s O_; x s s	:=7@=E5DC	; E7DA:59E	x 81 O_; 8s 2
O xu yu Rg x z t	C7DBA59	:C7=A=5DE	x 8 h

cs v x x s ss us su s xs y s us x x s x u x v x 7Q u vx ss s x xu us5 us xs5 x x x ux x u x vx x x s x7 Muxs s vx s x x x x s s u us v x u ss u x xu yux s x s x x sy s x s t st 7

Px xFcQMYUkMcQdUdeQZ PQac_PfOQcQdUde_OMcQMQ^QcSUQUQYQOecUDQPU dfcdQcQSQ^QcMNUYQPQeUd_YMc aQ^ecf O_^dfZ ac_acUf MY O_Zf^QUaQcUWZ5VfPQefYeUZUd

AZE N t t xz z u t z

M s s x xs s v yus xs x s s s s xu x s s x5 x x s x u x x vx x s x x x s s7 dux s vx ts s s xs s s x x x zx ux y s u s x vxus s x7 ex xx x s s s x s st s x x 5 v yus s x x x ux x7

dx s s xs s xv ux vx :9. ; 9. s x xu x s s x5 u x x x vx :9. s x x 5 u x x x vx :9. s _ / Z u x x x vx :9. s xu x s s x7 ax yxus x us x s xs s ux x s x x x7 gs x xzs x x s x x x s s x us x s x vx x t s x5ys s u ts xs s vx ts s7

fz	hN_S8P e: 1z 2	hN_S8P e; 1z 2
Ns s	:7DEC7, EA5AA	:@7AA=5=E
Qu x s s x 6:9.	:7A@7D9E5@	6:EC7AC@5DB
Qu x s s x 6; 9.	:7DB7=; =5, D	6A=B7C9=5:
U x x 4:9.	:7CAC79@5C=	6:==7@95; ;
_ / Z 4:9.	:7DC:7CE; 5CE	E:7A@@59E
Qu x s s x 4:9.	; 7, A; 7CD:5BE	@D97BD:5B@

Sx s xs s st s x xs xs s x x s s5 s xs v u x 5u u x s s xs u xs x vx x s s x7 Nx xyus s xs s x vx s v u s s u x x vx x x z x x ux5s yx us x s sux s s s s y u s s s u x x x vx xyx s7

AZF d v t xz z t z

d v	Z t t xz z t z	dz tu t z v t t
U s x xs s	a s yus xs s x s s s x x u x s xs u y x vx x xu x7	Z s szx x vx xu x xu s
P u s x u t u	a z s s xs us s su v x x xs suux x 7	Nx xyus x xu s
Z s xu x s	O y s 5x s s 5u x xu 7	Q xu s 5s x s x us5 v zx x
a v u x v yx s vx x s x	f s xs x x z x 5s s x 5 t v t s 7	_ x s s s
R u s x x us xyu x s	cxz s u s u5xu t s xs x s s s xs x x s 7	cx st x s s x x us
Pxyxu x t s x x 8 x	dx s s x us s5 xu x x x vx x ux7	ax s s s
Mts x x s u vx x s x	Q vx s x v us s x x z x x x s x7	Nx xyu s

d v	Zt t xz z t z	dz tu t z v t t
Muux xs s	Os us x u x5 s us x5u suux s x s 7	Nx xyu s x s

O u x x zs s x v s s x xu x x s s 7Qu s x x x vx yus x v v s 5s u vx x x xz s x u vs s5us s s s s us s7U x x s s ss x x x x s s s ux x s x s s s x x5vsus x s us s u s7

O us x s v s s s vx s x u s vs s s sG xu x us x s s vx x vx x7 a x vx xs u us x x x vx s xs x u u u s s s xs xu x 7cx s xs y u s x ysux u s 5u s s xs s x x x x 7

B7evz t zv t xt x vt z z

B7 P t t t vz t t z z zt z

dux s xu s vs x x d:7 d s xs s sux xs u u su x 5u ;BD v x vx AA9 h 5 xs xs s :@C5@99 h PO7O s s u d;5s x us su s x y s us vx xyx s s s x5 v u x s s s s x x z x st s v us x s s x5 s s v suxxs us su s x x us x x u t u s s s 7

Mxzx xs x us s x xvx x xz s xs uss s x 5 zx x s u s d v6Q 8 =9 z svx5 u s t s xs us PO u x s x x5 us xs YRa x y s s x x s s x x vx x vx us v s7 P x s xs s xs s u x s x x y u s x s x u u x 5ys s u s xs s yu s s s x x u s v 7

d: v ux :CC7=;B5;E: h 8s ys s vx :AB7A:E5A== h 8s d;7O x x u u x s x x :CE79C; h 8s ys s vx :D=79:;5;DC h 8s 5 x suxxs x x z x x us s s7 U y u x s x x :9E79DC5DB; h 8s d: ::D7B:@5DBE h 8s d;7 Mux x v yx x x vx u x y s s x x zx us5 xv ux x s x u x u7

B7; Qz v z zt z vt t vz t zv t xt

a u zv	Sh QP 8 NP 1 i 2	ORee t 8 bPe	e z bxP 1 i 2	R z zv v bxP 1 i 8t 2
S sv s	;E5C9 8=9	B9 h 8=959 h	BC5E9	=A7CE;
Y ux x x u	@A5BA 8 A9	:99 h 8 A959 h	:;A5D9	AA7=@@
ds s Y ux	:=5;9 8:A	=9 h 8:A59 h	=B599	:B7B9
du s s us W	;;5AA 8;@	A9 h 8;A59 h	B;5E9	;C7C9;

Px xFcQMYUkMcQdUdeQZ PQac_PfOQcQdUde_OMcQMQ^QcSUQUQYQOecUOQPU dfcdQcQSQ^QcMNUYQPQeUd_YMcaQ^ecf O_^dfZ ac_acUf MY O_Zf^QUaQcUWZ 5VfPQefYeUZUd

au zv	Sh QP 8 NP 1 i 2	ORee t 8 bPe	e z bxP 1 i 2	R z zv v bxP 1 i 8t 2
du ss us UW	=B5=9 8 @9	CA h 8 =C5A h	DC5E9	@@79C@
fafNY	**:AD5A9 8 :BF**	**=:B i 8 :BD5B i**	**=E95B9**	**:DF79D;**

d s u vx u x vx su x 5 v x x5 x s x x5ust x PO MO5 st x5 s s xs5 xu x5 xzs xs s s s 5u us x5 us xs x x x ux7csu v v s u x x x s t x vx x s s x s ss x x s x x x x7^ x us su s s x x s x 7

O s vs x x zx us uss xs s u us us xs ts x x v y su5 s su v t v xu s zx xs s v yx x s ys s vx ux x xs s s xx7M x s xs v x xs s t us x x s s s7ax s xs x us5s s s xs s x x x x s x5vxt ux x xs usv 5 xz vx xyx s AA8@A z svx O7

B7=b v t xvt z v 6zv v

B7=7 Vx vt xz vt tv t z5 x v z zx

P x	Vx vt	e:	e;	g t z
U7	Os su s x s s s vx v ux x	95@C@99	95=:999	Z h
U7	cxv ux xs s s s s x vx zs x u xyxu vx x s	:9@5=ABA	E; 5::C	O_; 8s
U=	a v u s xv x s s s vx x x z x x xu us	:CC5=; B; DE	:AB5A:EA==	Z h 8s
U@	a v u s s s x ; 9 vx s	=7A@B5A; ACD9	=7.=95=E9BB9	Z h
UA	Rsu vx us su s x	:=5C==;	:=5B=E=	.
UB	Os su s x s s s s s vx us x	95=:A999	95=:A999	Z h
UC	Os su s xs s s s x x vx us v s	=D95A99	=D95A99	h

V7 J t 1brQP55brNP528 :799 J 95ADA99 Z i

V7 J V= 95BEEB J :9A5=BCB; : Pa; 8t HVA J V= ; 9 J =7BAC3B; BDE9 Z i

VB J V= 8 1V7 E7DC92 :99 J :=5D==:F=.

Uv us U= xs s x x z s s ss vx xyx s s s agSUd u x s vx s s x s z s 7 a v u s v t s x s x x x sy s s s x xu s x h 5 s v us vx z s s xs s xu s x x s Z h 7Q x z s vx us x x x ss5 s x xs x vx us v s x x x us7

Px xFcQMYUkMcQdUdeQZ PQac_PfOQcQdUde_OMcQMQ^QcSUQUQYQOecUDQPU dfcdQcQSQ^QcMNUYQPQeUd_YMcaQ^ecf O_^dfZ ac_acUf MYO_Zf^QUaQcUWZ5VfPQefYeUZUd

B7=7; Vxvt xzx z t z t v

Vxvt 8 t z	e:	e;	ez vt z
MO7 6u u x x v x s	9 h 8s	9 h 8s	ax x xs s u x s s avO7
MO7; 6 v u x x s s	:CC7=; B5; DE h 8s	:AB7A:E5A== h 8s	Q x z x s s s vx xyx s agSUd7
MO7= 6 s s u u	6	6	cs s x us u uG x s xs s s s ux x xs x s s7
O x xu u x s	:CE79C; h 8s	:D=79:; 5; DC h 8s	Ox x xs s s s v x s x7
cs v u x 8u x s	95EE9; A:	95DAA; @	Z s x yus s vx v x s xG sz :597
MO7@6 x x us x 8 x x Rg	:59BDA; :	:5; 9; ; E9	cs x x xs aOd us su s xs Rg vx xyx s7
MO7A 6 us x s s	=:A h	=:A h	Q x z s s s s ux u u ts x 7
P s s s s sz xzs s	; 5=C9@; x	; 5@9@AD9 x	gx yus xs x xs xs s x s s x yxus x s s x7

O x s s s x vx yus us s s x v 7cs s s vx v x s x x x x x s x s s vx s ts s x u vx vx xs y us s x x z x y s x us 7Muxs s vx s x x x s xs u xu s s v u x 5 s ts x u t u x xs s7

B7=7= Vxvt t v xzx t t

Vxvt e:	ht t z
gs s x s s ys s egM	:7AE7=:B5@ x
egM	; @=7; ; :5D9 x
gs s x s s u egM	:7@9; 7A=D5; : x
O u 6 s ys s egM	:9:7ACD599 x
O u 6 s u egM	:; ; 7E9E5=D x
M x s t st u egM	:79@D7=:D5@@ x
O t x x u egM	=A@7; :E5DC x
P s s x x s	:;

Vxvt e:	ht t z
P s s x xu x	B 5 x @6E
Ps s x st s	9D7 97; 9; B

B7A dz zv t zt vz z xt z t z

cx x s xus us st s xs x s z s x x x vx s u s t x u su x x x xu s x x 7Uus us x s x x x x s x5 s y s x5 t s x x s s x s x s x7Z s t u xs s x su s xs s x v yus vx s s s 7

dxu s xs s ux v x x s s s s s s xs xu s x x x x ux5 x s s xs u u x 5suux s s s s s vx x x x5 s xs suux t u x x xs us vx x x x7 Ns x x s s xz x x x s x x s xu s y u s sys s v x sv 7

d z s s suux t s xs x s s x s z s x xu s s u su x xu u5 u s xs aQ5 xu x s s x5 s us x suux u s 7 Y u s x s s x s zs s x xu 7 Muux s usv s s x x s s vx x x x ux vx y x vx x xu x7

Ud x s5 s s s xs xu s xv st vs x zx s xs u vx 5 s xs z t s 5u xu s xs vx x s xs u s s s szx y z yu 7 Qu s vx x x z x x xs xs s v u s s s5 s yx vx us v s v sx xz s x 5ys s u y vs xs x x z x x ux u uxs x xu us7

B7B e zz xz t t z

R s s xs x x d: x x u s s v s t u x s t st u s 5 s s x vx :79@D7=:D5@@ x u egM5 u t s t x xyu s 5 s s x vx =A@7;:E5CC x u egM7 gs s xs ss x x :7@9;7A=D5;: x u egM7

O t s t x xyu s su x s u x x x xx z t x s xs x z t s us x vx s x x s x s v sy xu yu7 Nx xyu s s z s x x x x x s s xs x x xs x x x x svs vx y u s x7 M x x s x s su x vx v s suxxs u x ss s v x x x s s xu x 7

C7g ut 5t z zv t zx

C7 dz ut v t t t zt v t

M s s xs u s x x s u s v x t ux v ax s 5 vx yus x u x u s v s s x x s x7 U x x s xs s su x x x x x ux s x u x 5ys s xs s xs s u y s u s 7 R u x u s v s s x7

Y u s x x xz xs s xz vx s s x s ust x x s usv x x x x7P u x s x vx ts 5 v x vx x x s x x syx x x x zx xs s usv x x s 5 z syu 7d s x us s dR x x vxy s u yz s x vx v ux x5 us x5 su v x x xu ux x x x ux vx u x7

Z s s xs s suux s ss x x x x5x su s xs s x x x ux us x vx x x x7d x5 s x s x xu s x xx s s s x xx x ux7 d sys s vx xyx s v t s x y s u x x vx =99 ; x yxus x su x 7

CZ; e t t vtxt t t vtx z xz z z

_ 7	P tx z u vt	Vxz vt z vtxt t t	V z z z
:	S sv s	@99DE96O:	Rg x su x 5 us x x sx 6s s
;	Yux x x u ax s	@99DC96O:	Rg x su x 5 us x x sx 6s s
=	ds s Yux	@99DC96O;	Rg x su x 5 us x x sx 6s s
@	du s s us x x W6lg us W	@9@9DE6O:	Rg x su x 5 us x x sx 6s s
A	du s s us x x W6lg us WW	@9@9DE6O;	Rg x su x 5 us x x sx 6s s

WVx yus xs usvs s s x x x x s s s x vx u 5s yx us ux s s s vx s s s s t xu x x ux v u x5u s vsus s s sux x s xyx x vx us x y u s s7Muxxs xz s x x s us s u du s s us W du s s us WW7

d sys s us s x x s s s us u x u5 s sys s v t s s su x x x s s s s s xs v x 7^ s usvs s x x y us vx yus s u vx x x z x x xu us7 Q vx s x x s xs s u x vx s v x usv x5 s s s Rg5t s x s s x us syx x x7

CZ= dtv xt zt t z zt t u vt

O xu s xs x xs xs s s x x u us 5 st zx x s s yxus x usv 7U xz s 5 x x y u xs s s s x u x xs s t us5u xu vx x ys s s s x t v xu ss7a x x s x s x s s t s y x vx s x x s x v s x x x s x x s s vx x xs s t s s s vx su vs x7

a sy vx @99 h x u vx v ux x v usv z s x x s s s x x vx x su s x s t s yxus s s s x 7Q s s xs x xu s x xs s ts s s su v s x u u x us x7 QZ d u v xs s y s u aOd5 s xu s vx x ys s xs xs xs s vxu xu s xs s x vx xs x x x 7

Ys x u u x u x x s xs s x x vx v x s x vx =95A95:A5; A @9 h x ux x u u s s d:7dx s xs vx s x t x xu x s su x 7Q x z x v x x x z x s x x s z s x vx s v us5 x x s s x xz s s x7

CZA dz z z t zt xz zx t t zt t z

_ zs s xs s x x x svs s s x x v t x s usv x t ux7 dx vx xs s x x vx vx s x s 5 x x xs s us x x s x x z s xs s s x s yx us s yx s su s s su s usv 7Z s x s x x x vx xs s u v us x syxu xs s x x s us x vx suux 7

M t s s x x 5 x x vx u v u s x5x x x x x s ux ux x s x vx x u xu s x x s s xvs x x y u s x7 dx x s sts v s xs s x s x x su x s x s xs vx s s s s7 du x x5 xu s x x x vx v us x us x s s x s x u s x vx xu s x xu yux7

U x s s x5u s s xs v x x xs xs s u x vx u s t x u sys s x vx s 7^ x y x u t s x us x vx x s v x x5 x s s x s x vx u xu s x s s x 7U x x x s ts x u u x x y z yux xs s x vx x s u x x 5u zx s xs u s s s u x x u x7

CZB dz zv t zt v Q_eU z v v xz t t

a u vx s x v us v x yus t xu x x vx xv x x s s x x xu x5x s s x u s x x v 7Z s x xz s x s x us zs s xs x s s 5u x st s v u x x tx xyu s 5x xu s x s vx x ux7

O t s s s x s xs u ts u s ux x s v v ux xs x x z x s x s xs x sx 6s s7 Mvs s xs x x x x xs y u s z s x s x x s x x x5 xu s 5 s z x 7Mux x t xu x xu s s x u x vx v u x vx us yxus x s 7

au zv xz zx	Z t t vt z z z
Mx s xs u ts u s ux	a v ux x s s5 us x us us s v Rg5 x vx us v s s xs x x z x 7
Mvs s xs s u ts x u s ux	gx s x5 xu x x us s us 5y s 5x s s xu x s z x 7
f s xs v st s s s x	O u x x ux u x5 x x u s s5x su s x z s s u vx Gu s s x x st s7
Qu s u u s s	Qu s x x suux t x x x uxGu xu s x x s s sG xvs x u s s s v x 5ts x xu s x x x xu ux7
a x x xs u s	Y s xs sy z G xu x ys s vx u zx G x x u s x s u u x x y z yux7
N v x s x xu x x	R xs su x x x x s x x uxG s xs us x x s s x ts s x7

Zs x x xu s u u s s u v s s xs vx yus xu s x x 5s v u x s x vx x ux s s x u x x u s x v 7Z v x x su s s s us vx x u s x s x xus x7 _ x s x vx vx syxu s x x zs xs s u x s s xs u u x s s xs z s s u x x 7

kz t s x s x x s x s x s s s x s t s x7Muux x x s x u s x x sys x v xu s xu s s s s x su s u vx 7U x x x ux x s xs s xu s ys s vx u xus ux suux xs s 5 u x z s s s 7

D7V z z t zt5z t t zt t zt z z

DZa t t zt z z t

Nx xyu s zs xs s x x s xs x st vx xu u x s x x ux5 y s u s x sv s x7Q xu s s vx vx xs s xs u s 5vx x xu s xs u yz s vx u us s 7 M x s x us v zx s s x u x xu s x svs ux s x x s x x u s 7

a s yus xs x s s s x x st x x v xs s 5 x x vx vx s x5 s x svx x vx u xu s x s ss x x x x7 d x s x su s x xv us s x x5 s x x x z s s x u s 7Rxus x y x x xvs u v vx z s s s ys z s vx u 7

Ux yus xs xu s x x x x s s s vx s xux s s s s s xvs xs x s s x7 dx s x x u x vx s v x s 5 x s x5 ts x 5 st x x x ux s x yxus x usv 7Q u x s xs v u x s s vx x s s x x us s xs s vs s u u x s s s s 7

a z x x x s y u y s us 5 x su s s s s x x7Uu vx xs x x s u vx x xs y u x s u s x s 5s yx us x x x vx x vx us v s s yx su x s s s s ux x x vx s s s s t s x7d s s x v u x x x vx su x5 xux x5 t x xvs x7

DZ; b t xz uz z z v z

a z s vx t x s x x y u s xs z s s yxus x u x x s s s s t xz s 7 gx yus x vx xux x su s s x x xu x x y u x7 Qx u ts x x x vx v x s x s x dR5u u y s xs s xs u x s s x s x7

ax PO x x yus vx yus xs z 5 s s xs5u s xs5 s s5 x x u x x7 ax MO x s x x u x vx s ys x 5 xu x5 u s xs aQ5 xzs x xu x s x y u s xs s s s s vx x s s x7d x xu s x uxv x vx u x ss u s x x vx s x s x7

e z 8z t t	b uz vz vt	dz t t
d u su x	R s 5 vx 5x s s 5suux x su s xs s x 7	Z s st s s xs xu x usv 7
O u x PO	a s s x5 vx yus x5 s x u s t s xs u x 7	d z u xu s x u y u yz s x 7

Px xFcQMYUkMcQdUdeQZ PQac_PfOQcQdUde_OMcQMQ^QcSUQUQYQOecUDQPU dfcdQcQSQ^QcMNUYQPQeUd_YMcaQ^ecf O_^dfZ ac_acUf MYO_Zf^QUaQcUWZ5VfPQefYeUZUd

e z 8z t t	b uz vz vt	dz t t
O u x MO x ys s	a xu 5ys x5 x s s x s 6 s s x7	R u s x z s s s x u x xs s7
Yxzs x s s s	O s xs aQ xzs xu x s xG s s x xu ux7	a xu x s vxyxu u x u x7
NZd 8 aOd	Y x vx u x 5 x x5 x x s s s x vx us us x7	cx xu s xs v x vx y u s x s ts x x 7
QZd	a s 5 us us x x u Rg s xs u u u 7	R x x zx ux u s x7
csu v x ux	Qs x s x5u u s x5sx x5 x 6 x xu 7	U xz s xs x u u usv 7
M s s x x us	cxz s u s u5ux x x5 x x s 5vxz s x xu x s z x 7	R u s xs u v s s s x x ux7
Zs s x u us	Ux yus xs x x z x 5 s s s x suux s s 7	Q vx s v u s x s s s x x7

ex s xs QZd u vx s x u v u x s s x vxus ux x xs5 s x vx vx us us x us x s u s s x vx x vx x s u us x x x s s x vx x s u s x s x xz x7 Uus us xs v x xs s s x vx su s s7 a xu x us x s s x s x xz x7

a xvs xs x s s x u vx u x vx s x5 u x x x5 vx yus xs xu s x x 5 xz s x x sv x uxv x vx x x x7 ax s tx xyus x x x u xs s ss x 5 xu s x xs ss x u su s xs x ux6 5ys s x x xs s x s s u u x 7

DZ=a z t z z z t t

_ x s xs x x zs s s x ux x u u s s s x x5u s x ux s s s s x s x 7 dx s x u v u s y s us5x x z s us us s vx us us s5 s xs vx us us x s ts x 5u x vx us v s5 x x z s s s x xs7 Ms x x x zs x x xu s x u u us x x zx x xs s7

U xu x x v ux u v s xs v x 5 y s 5 x s s ust 5 u s x s x x ux vxzs s x vx sx 7 dx s x x st x s vx x s xus ux5u y s 7U x x x x su x x xs xs s u xu x u s s x ys s u s xs xu s s s v x 7

ax us x x s x u x x s x5 s xs vx us us x5 u x x x x x xx NZd7 P x vx vx us us x x x aOd s s x vx x s xs s 7ax s x us x s x u vxt 5 x x s x5y s xs5sx xs x su s xs u vx 7a xu s s z x s s x su s xz vx x s s x7

a z s vx x x s s x svs xs s u v vx y u s x u xu s x x 7_ x s x xyxu s x5 s s x u x xx u ts x usv x ux6 u x xz vx x s s x7 N zx vx x s x s z s u s xs x x x x 7

bz xv t z xz t t z	Nv t z
f s x u x s	O xs s s x 5 v u x 5u s ts x 7
Ox s s x s s	N s x u s v x x xu Gvx yus xs st s x vx v t s x7
U xu x x v us	R s 5x s s 5ust 5us us x5 x s x s xs x x ux7
Us xs x xux	O u x u5u vx 5s z x 5u x xz vx x x s s7
P s x x x x s x x	O us s xz s x s xs y u s z s s7

DZA Z t zt z t z x tu t zt

cx s x x s x v u x yxus x s s s x sz xzs x s x xu 7Uv us y u us su s xs s s s5x x z s v s5x x z s us s vx us us s5u x xu u s x vx us v s v t s xs7Q vx s u t s x xs x us u x xs x xu us7

O s s s s s v x v u x u y x x sux xs x y u s x us v x s xs7Z v yus x vx s x s usv x vx s x x s s x x x s xs u 7_ v yx x s x s x s xs x xs t s s s vxyxu G x s s xs s x s x x z s5 z s 5 xz s v t s xs7

ax x svs vx v st s x x s xs s vx s s5y u s xs sv s xs x x u y t zs vx y s s x7 ^ x us su s s s st x x s s 5 s tx xyus s z s x xx x x x z x x x s s7d x x x ux x s x x y u x usv x x s 7

O s xs u s x x z x x ux x x x s s xs x y s x x x x7 dO_a6 xyxu vx x s s x x x x x s x x svs x x x s s5 v 6 u x s s xx ys st s7 Z s s xs x s s s s s xz s x s x xxs x u x x zx us usv 7

DZB V t z u v t z

Z s x vx y s x t u s x xs s x usv ux :; vx x x s x5 u u vs s u Z s s vx vx s x s s s R v x vx s x7 Nx xyus s z s vx yus xs y s us y s xs v u x x 5u s s xs ux x vx t s x s ust x7

Z s x s x x vx y s x s s s s x s yx us s syxu x x u u s x5 suux s xu s x x s t s xs s us x vx z s s7 Uy s x t ux vx u x s s s usv x vx x x5 ys s u y vs xs us su s y s ux u us su s xs x us ys s x x s xs x xu zs s s x v yx x vx u v x vx x s s x7

Px xFcQMYUkMcQdUdeQZ PQac_PfOQcQdUde_OMcQMQ^QcSUQUQYQOecUDQPU dfcdQcQSQ^QcMNUYQPQeUd_YMcaQ^ecf O_^dfZ ac_acUf MYO_Zf^QUaQcUWZ5VfPQefYeUZUd

E7P v zv t xt z vz

dx xu s vs xs s xs ux s d:5u u u ss y s ux x su x 5 us x YRa xz s s x x vx x vx us v s sx 6s s5 x x u x t ux v usv x s s s x7O yz s s s xs s x s xs d v6Q 5 u s xs vx =9 z svx v t vx su x vx =99 ; x usv x7

Os su s xs y s us s x x vx :@C5@99 h PO5u :AE h MO :@C5@99 h x x vx xyx s7 d us xs s s x x vx =:A h 5u :AC5A h x x aOd7d x x x vx x vx usv s s us su s x x us s s vx =D95A99 h xz s x us 5 xz vx xyx s AA8@A z svx O7

Ox x xs x xu us x s s vx v x s x x :CE79C; h 8s 5 x s s v x u x u s ux u u usv x y s s x x s s x 7a v u s y s us x s s x x :CC7=; B5; E: h 8s 7cs s s v u x8ux x x5t s y u us xz s s xs u x u s s s y u v u x s s x x s s 7

Y u s x x xs xs s :; vx x x s x5u s x vx x xu x x s @6E7U xz s xs usv x x x x s xs s y u x5suux x x5x su s xs s x ss x x s x vx x x7O suux 5 xu x x xu ux v s ux x x s s s s x y u s x x7

Q s s xs xu s vs s xs s u 5 us us xs ts x x u v y s u xz s x u y u x vx ux x xs usv 7M x s xs v x xs s t us x x x s x u s x7 Z s xs x s s s s us su s x s xs x s x x x xs x u x x zx u7

U u 5

Uz7Tx Q C s x



Px xFcQMYUkMcQdUdeQZ PQac_PfOQcQdUde_OMcQMQ^QcSUQUQYQOecUOQPU dfcdQcQSQ^QcMNUYQPQeUd_YMcaQ^ecf O_^dfZ ac_acUf MYO_Zf^QUaQcUWZ5VfPQefYeUZUd

N_Rj N N7OdRhWWd fRdZ VP eVPa_egZ bdRhVVa_Nf

Nx s vx s x s vs x x zx x ux5 x x x x ux x u x us u s s x yxus x u sv x7 O xyu x z ts s s x x z s xv x x vx vx s x s x dR7gs x vx x ^;98:; l ;7E;@W x P:; l :D@ xGx x s s x x s s vx us u x x 6:A z svx O7

Q x z s s x x z s s zx x s x v u x7Z s s xs vx x vx A. x x s us s z s vs s5 s x x z s x xu us x x s s s s bpzx 8dO_a7O x xu u s s vx v x s x x x s h x x 7Ps x x zx x ux x u x u vx ts s x s v x vx tx xyu s 7

N7. T tx t 6 xt z zvz t z v

bt t z	ht t z
O usvs s	@99DE96O:
d sys s s us s	@CA599 ;
Us x s	=599
g us	:7@; A5999 =
d s u x s s vx xyx s	Ss x s s x 6 ux s s u x s s
P t x x x s	csv s s xGxz vx xyx s AA8@A z svx O
ex x s s x s s ss	; ; z svx O
ex x s s x x s s vx us u	6:A z svx O
ze 6 x s xu s x s s s x x	:59A h 81 = W2
cs s vx u t vx sx	95C9 :8

h J ADB599 =599 J :7A; B5999 =

Urf J :59B :7A; B5999 J :7AFC5; B9 i 8X

Urh J 95==A 95D9 :7A; B5999 J ===5CB i 8X

Ur t J :7AFC5; B9 4 ===5CB J :7E; F5A:B i 8X

brvt v J :7E; F5A:B =D8:7999 J CD8CEE i

O xyu x Tpe x x s s yx z ts s x s5 s s s us 7 O x s Tpg x x s u t vx sx 5 u us su s xs x us us vx 95==@ h 81 = W27 ds u s vx us u x x vx x s s s v yx x s vx x x s s s xz vx xu 5 x s s vx t s s s7

N7. T tx t 6 z z z t t t z t zt z

V z t t t t	ht t z
a z s s	:9 x8 GA x8 s s s s
ex x s s s x 8 xv s	; ; 8:D z svx O

V z t t t t	ht t z
Rsu s s s s s s s xz s	95;ECB:E
ex x s s xu s x s	:E5E9@CB z svx O
Ps x vx x vx xyx s	^;98:; l ;7E;@W xGP:; l :D@ x
S svx6 x xu s x x	;7CCA59@CB:E W x

frzv J:E41;; 6:E2 B98:CE J:F5F9ADC txz P

_rzv J;7F;A41:F5F9ADC6;92 :EA J;7DDB59ADC:F X z

cr J;A :7E;F5A:B999 ;7DDB59ADC:F8:7999 J:;:7EA:5= i 8t

cr z J:59B :;:7EA:5= J:;D7F==5F i 8t

Rrz5e: J:;D7F==5F8=5BDA=B: J=B7DF;599F i 8t

dz t 8 z t z	ht t z
O xxu us s d: s s v x s x	=A7CE; h 8s
O xxu us s d;	=B7AA;5;DB h 8s
Os su s x x us s x	BC5E99 h
e s8u u x	Mk6s s8d
cxz 8 x	AA8@Az svx O
Pxt vx us u	A5D=D =8
csu v v s u	P^A9
a vx x s ss x u x us t savO	:99.
O x u xuyu	;AB5A: h 81 ; s 2

ex x s s xv s x x xz s s z svx x6 x xu s x xGx x z s x x s v u ysu s x vx u s x7Z s s xs vx x x x vx s u s bpzx x s us x s s Qpx7csu v x x xs xs s s s s t x vx x s s x vx x x 5u s s xs ss x x s x x x x7

N7;Yvz z z v bz t 6xt z zvz t z v

bt t z	ht t z
O usvs s	@99DC96O:
d sys s s us s	:7;A95AD ;
Us x s	=5C9
g us	@7B;C5@B =
d s u x ss vx xyx s	Ss x s sx6ux ss u x ss

bt t z	ht t z
P t x x x s	csv s s xG xz vx xyx s AA8@A z svx O
ex x s s x s s s s	; 9 z svx O
ex x s s x x s s vx us u	6:A z svx O
ze 6 x s xu s x s s s x x	95AA h 81 = W2
cs s vx u t vx sx	95A9 :8

h J :7; B95BE =5D9 J A7C; D5AC =

Urf J 95BB A7C; D5AC J ; 7BAA5F=9 i 8X

Urh J 95==A 95B9 A7C; D5AC J DD; 5D== i 8X

Ur t J ; 7BAA5F=9 4 DD; 5D== J =7=: D5CCA i 8X

brvt v J =7=: D5CCA =B 8 :7999 J ::C5:E i

O xyu x Tpe x x s s yx z ts s x s5 s s s us 7 O x s Tpg x x s u t vx sx 5 u us su s xs x us us vx 95==@ h 81 = W27 ds u s vx us u x x vx x s s s v yx x s vx x x s s s xz vx xu 5 x s s vx t s s s 7

N7; Yvz z z v bz t 6 z z z t t t z t zt z

V z t t t t	ht t z
a z s s	D x8 GA x8 s s s s
ex x s s s x 8 xv s	; 9 8 :B z svx O
R su s s s s s s s xz s	95; =D9EA
ex x s s xu s x s	:B5EA; =D: z svx O
Ps x vx x vx xyx s	^; 98:; I ; 7E; @W xGP:; I :D@ x
S svx6 x xu s x x	; 7=B=5; =D9EA W x

frzv J :C 4 1; 9 6 :C2 A98:CE J :C5FB; =E: txz P

_rzv J ; 7F; A 4 1:C5FB; =E: 6 ; 92 :EA J ; 7=C=5; =E9FB X z

cr J ; A =7=: D5CC=CE; ; 7=C=5; =E9FB 8 :7999 J :EE7 D95=9 i 8t

cr z J :59B :EE7 D95=9 J :FD7BDE5E; i 8t

Rrz 5e: J :FD7BDE5E; 8 =5BD9999 J BB7=AA5; 9C i 8t

dz t 8 z t z	ht t z
O x xu us s d: s s v x s x	AA7=@@ h 8s
O x xu us s d;	AB7@A:5@= h 8s

dz t 8 z t z	ht t z
Os su s x x us s x	:; A5D99 h
e s 8u u x	Mk 6s s 8Z t u
cxz 8 x	AA 8 @A z svx O
Pxt vx us u	:95D:C =8
csu v v s u	P^BA
a vx x s ss x u x us t s avO	:99.
O x u xu yu	:A95@C h 81 ; s 2

ex x s s xv s x x xz s s z svx x6 x xu s x xGx x z s x x s v u y su s x vx u s x7Z s s xs vx x x x vx s u s bpzx x s us x s s Qpx 7csu v x x xs xs s s s s t x vx x s s x vx x x 5u s s xs ss x x s x x x x7

N7= et t Yvz 6 xt z zvz t z v

bt t z	ht t z
O usvs s	@99DC96O;
d sys s s us s	; =9599 ;
Us x s	=5C9
g us	DA:5999 =
d s u x ss vx xyx s	Ss x s s x 6 ux ss u x ss
P t x x x s	csv s s xGxz vx xyx s AA8@A z svx O
ex x s s x s s ss	:Dz svx O
ex x s s x x s s vx us u	6:A z svx O
ze 6 x s xu s x s s s x x	:59A h 81 = W2
cs s vx u t vx sx	95C9 :8

h J ; =9599 =5D9 J EB:5999 =

Urf J :59B EB:5999 J EF=5BB9 i 8X

Urh J 95==A 95D9 EB:5999 J :FE5FCA i 8X

Ur t J EF=5BB9 4 :FE5FCA J :79F; 5B:A i 8X

brvt v J :79F; 5B:A == 8 :7999 J =C59B= i

O xyu x Tpe x x s s yx z ts s x s5 s s s us 7 O x s Tpg x x s u t vx sx 5 u us su s xs x us us vx 95==@ h 81 = W27 ds u s vx us u x x vx x s s s v yx x s vx x x s s s xz vx xu 5 x s s vx t s s s7

Px xFcQMYUkMcQdUdeQZ PQac_PfOQcQdUde_OMcQMQ^QcSUQUQYQOecUDQPU dfcdQcQSQ^QcMNUYQPQeUd_YMcaQ^ecf O_^dfZ ac_acUf MYO_Zf^QUaQcUWZ5VfPQefYeUZUd

NZ=et t Yvz 6z z zt tt z t zt z

V z t t tt	ht t z
a z s s	:; x8 GB x8 s s s s
ex x s s s x 8 xv s	:D 8 :@z svx O
Rsu s s s s s s s xz s	95@; DAC:
ex x s s xu s x s	:A5C:@; DB z svx O
Ps x vx x vx xyx s	^;98:; l ;7E;@W xGP:; l :D@ x
S svx6 x xu s x x	;7.=A5@; DAC: W x

frzv J:A41:E6:A2 D;8:CE J:B5D:A;EC txz P

_rzv J;7F;A41:B5D:A;EC6;92 :EA J;7.=B5A;EBD: X z

cr J;A :79F;5B:=E99 ;7.=B5A;EBD: 8:7999 J BB7FF:5CA i 8t

cr z J:59B BB7FF:5CA J BE7DF:5;= i 8t

Rrz 5e: J BE7DF:5;= 8=5C=E9D: J:C7C9599; i 8t

dz t 8 z t z	ht t z
O xxu us s d: s s v x s x	:B7B9 h 8s
O xxu us s d;	:B7CEC5@;E h 8s
Os su s x x us s x	=B599 h
e s 8u u x	Mk 6s s 8d
cxz 8 x	AA 8 @A z svx O
Pxt vx us u	=59EA =8
csu v v s u	P^=;
a vx x s ss x u x us t s avO	:99.
O x u xuyu	;@=5@@ h 81 ; s 2

ex x s s xv s x x xz s s z svx x6 x xu s x xGx x z s x x s v u y su s x vx u s x7Z s s xs vx x x x vx s u s bpzx x s us x s s Qpx 7csu v x x xs xs s s s s t x vx x s s x vx x x 5u s s xs ss x x s x x x x7

NZA ev t t v t z z V6Vh vt W6 xt z zvz t z v

bt t z	ht t z
O usvs s	@9@9DE6O:
d sys s s us s	=@E5B9 ;

bt t z	ht t z
Us x s	=5C9
g us	:7, E=5A; 9 =
d s u x ss vx xyx s	Ss x s sx 6 ux ss u x ss
P t x x x s	csv s s xGxz vx xyx s AA8@A z svx O
ex x s s x ss ss	; 9 z svx O
ex x s sx x s s vx us u	6:A z svx O
ze 6 x s xu sx s s s x x	:59A h 81 = W2
cs s vx u t vx sx	95C9 :8

h J =AF5C9 =5D9 J :7, F=5B; 9 =

Urf J :59B :7, F=5B; 9 J :7=BE5FC i 8X

Urh J 95==A 95D9 :7, F=5B; 9 J =9; 5A; B i 8X

Ur t J :7=BE5FC 4 =9; 5A; B J :7CC95C; : i 8X

brvt v J :7CC95C; : =B 8 :7999 J BE5; ; i

O xyux Tpe x x s s yx z ts s x s5 s s s us 7 O x s Tpg x x s u t vx sx 5 u us su s xs x us us vx 95==@ h 81 = W27 ds u s vx us u x x vx x s s s v yx x s vx x x s s s xz vx xu 5 x s s vx t s s s 7

NTA ev t t v t z z V6Vh vt W6 z z z t t t z t zt z

V z t t t t	ht t z
a z s s	D x8 GA x8 s s s s
ex x s s s x 8 xv s	; 9 8 :B z svx O
R su s s s s s s s xz s	95, =D9EA
ex x s s xu s x s	:B5EA; =D: z svx O
Ps x vx x vx xyx s	^; 98:; I ; 7E; @W xGP:; I :D@ x
S svx6 x xu s x x	; 7=B=5, =D9EA W x

frzv J :C 4 1; 9 6 :C2 A98:CE J :C5FB; =E: txz P

_rzv J ; 7F; A 4 1:C5FB; =E: 6 ; 92 :EA J ; 7=C=5, =E9FB X z

cr J ; A :7CC95C; 9FDC ; 7=C=5, =E9FB 8 :7999 J FA7EC5C= i 8t

cr z J :59B FA7EC5C= J FEZEFB5FC i 8t

Rrz 5e: J FEZEFB5FC 8 =5BD9999 J ; DZD9:5FAF i 8t

dz t 8 z t z	ht t z
O xxu us s d: s s v x s x	; C7C9; h 8s
O xxu us s d;	; D7, AB5999 h 8s
Os su s x x us s x	B; 5E99 h
e s 8 u u x	Mk 6s s 8 d
cxz 8 x	AA 8 @A z svx O
Pxt vx us u	A5@9D =8
csu v v s u	P^@9
a vx x s ss x u x us t s avO	:99.
O x u xu yu	; BE5@ h 81 ; s 2

ex x s s xv s x x xz s s z svx x6 x xu s x xGx x z s x x s v u y su s x vx u s x7Z s s xs vx x x x vx s u s bpzx x s us x s s Qpx 7csu v x x xs xs s s s s t x vx x s s x vx x x 5u s s xs ss x x s x x x x7

NZB ev t t v t z z V6Vh vt W6 xt z zvz t z v

bt t z	ht t z
O usvs s	@9@9DE6O;
d sys s s us s	BDB599 ;
Us x s	=599
g us	; 79AD5999 =
d s u x ss vx xyx s	Ss x s sx 6 ux ss u x ss
P t x x x s	csv s s xGxz vx xyx s AA8@A z svx O
ex x s s x ss ss	; 9 z svx O
ex x s sx x s s vx us u	6:A z svx O
ze 6 x s xu s x s s s x x	:59A h 81 = W2
cs s vx u t vx sx	95C9 :8

h J CEC599 =599 J ; 79BE5999 =

Urf J :59B ; 79BE5999 J ; 7C95F99 i 8X

Urh J 95==A 95D9 ; 79BE5999 J AE:5C9 i 8X

Ur t J ; 7C95F99 4 AE:5C9 J ; 7CA; 59C9 i 8X

brvt v J ; 7CA; 59C9 =B 8 : 7999 J F; 5AD; i

O xyux Tpe x x s s yx z ts s x s5 s s s us 7O x s Tpg x x s u t vx sx 5u us su s xs x us us vx 95==@h 81 = WZ7 ds u s vx usu x x vx x s s s v yx x s vx x x s s s xz vx xu 5 x s s vx t s s s 7

NZB ev t t v t z z V6Vh vt WW6 z z z t t t z t zt z

V z t t t t	ht t z
a z s s	D x8 GA x8 s s s s
ex x s s s x 8 xv s	;98:B z svx O
R su s s s s s s s xz s	95;=D9EA
ex x s s xu s x s	:B5EA;=D: z svx O
Ps x vx x vx xyx s	^;98:; l ;7E;@W xGP:; l :D@ x
S svx6 x xu s x x	;7=B=5;=D9EA W x

frzv J:C41;96:C2 A98:CE J:C5FB;=E: txz P

_rzv J;7F;A41:C5FB;=E: 6;92 :EA J;7=C=5;=E9FB X z

cr J;A ;7CA;59C9A99 ;7=C=5;=E9FB 8:7999 J:AF7EB:5C= i 8t

cr z J:59B :AF7EB:5C= J:BD7=AA5;: i 8t

Rrz 5e: J:BD7=AA5;: 8=5BD9999 J AA79DA599E i 8t

dz t 8 z t z	ht t z
O x xu us s d: s s v x s x	@@79C@ h 8s
O x xu us s d;	@@7EAA5@;E h 8s
Os su s x x us s x	DC5E99 h
e s 8u u x	Mk 6s s 8Z t u
cxz 8 x	AA 8 @A z svx O
Pxt vx usu	C5AAD =8
csu v v s u	P^A9
a vx x s ss x u x us t s avO	:99.
O x u xuyu	;:D5@@ h 81 ; s 2

ex x s s xv s x x xz s s z svx x6 x xu s x xGx x z s x x s v u ysu s x vx u s x7Z s s xs vx x x x vx s u s bpzx x s us x s s Qpx 7csu v x x xs xs s s s s t x vx x s s x vx x x 5u s s xs ss x x s x x x x7

Px xFcQMYUkMcQdUdeQZ PQac_PfOQcQdUde_OMcQMQ^QcSUQUQYQOecUDQPU dfcdQcQSQ^QcMNUYQPQeUd_YMcaQ^ecf O_^dfZ ac_acUf MYO_Zf^QUaQcUWZ5VfPQefYeUZUd

N_RjNO7eVZgYNdVbhTVe eVOWN_fgdVR_RdTRfVPR

d s x y x u agSUd6dMcMT=5vs x x z ux QcMA5 z syu zx x s y s d v6Q 8=9 z svx7 cx x x x z u xz s x s s ss vx D7CB9 x s x u x7 estx x x vx s s xs s v u sv x xs s 5 v u s x xu us u x s 7

ax d: x y x u v x vx AA9 h x vx z ts x Rg vx :@ G x d; 5 v x vx A99 h x vx vx :B5A. 7 N s u vx u x s MO us xs yxus ux s 7 Q x z s us us s ts x x x x s s s s v x u v xu 7

O7 T tx t 6 x v z txt z

bt t z	e:	e;
a x x PO s s	;E5C99 h	;C5999 h
a x x x s x MO	=9 h	@9 h
_ x s x 8 u s x	d v6Q 8=9 z svx	d v6Q 8=9 z svx
d sys s v t s	=99 ;	=99 ;
a x vx Rg	:@	:B5A.
Ns s vx sv s x	agSUd6dMcMT=	agSUd6dMcMT=

Y t	Vtxzz utt1i 8;2	b x v z e:1i 2	b x v z e;1i 2
Ud s x	@D5ACD	:7BC5DCE	:79=95D@C
Rxt s x	DB5B=9	;79E=5A=@	:7D@C5DDD
Z s x	:@95AC	=7=E@5;@A	;7EEA5ED9
M x	:@95=DE	=7=;95AB	;7E=95AD9
Z s	:CE5C:E	@7.;D5CBE	=7B@@5=:@
U x	;:;5@C=	@7C:95;@	@7.AC5@AB
U x	;9;5=;=	@7@,95=D:	=7E9:5C9E
M z	:D;5D@9	@79;B5D9:	=7AA@5=::
dx x t x	:@@5A@B	=7,C95CCC	;7DDC5999
_u t x	:9C5CC9	;7A=B5;@@	;7,=D5BA9
^ x t x	C=5A9=	:7CB95=;	:7AA=5B9A
Pxux t x	=C5EB=	E995DD;	CEA5CB
fafNY N_gNY	**:7BBC5DF:**	**=B7D;F5F;A**	**=:7B=DBB:E**

Px xFcQMYUkMcQdUdeQZ PQac_PfOQcQdUde_OMcQMQ^QcSUQUQYQOecUDQPU dfcdQcQSQ^QcMNUYQPQeUd_YMcaQ^ecf O_^dfZ ac_acUf MYO_Zf^QUaQcUWZ5VfPQefYeUZUd

a v u s xuyus d: x x :7,9=59; D h 8h 8s 7Osu x s s x x z s s uvx s vx x x z s x xu us v s7a x xs x us s x vx usv s x x u x s sv x v u x y s us5u y vs x s xs ux x x xu ux7

O7 T tx t 6u t t e:

Y t	P 1i 2	Sh x zv 1i 2	ORee t v 1i 2	V 1i 2	Y t z1i 2
Ud s x	B7=@C5::	DB; 5:D	=995D99	A7:D@5E@	95999
Rxt s x	A7C=; 5DCA	:7EE5DE:	O@D5,CC	=7CD@5C9B	B; 5,; @
Z s x	=7,BE5C; @	:79D@5E@B	:7,@B5@9E	E=D5=BE	E::5@E
M x	=7:B@5,@E	:7:BB5A9A	:7:A=5C=C	D@@5995C	DBE5BA9
Z s	=9C5C=D	:AA5@EC	:A;5,@	95999	=7CBA5DAB
U x	;EC5D::	:AE5E;	:=D5B;9	95999	@7=EB5=AB
U x	=9C5C=D	:B95=:9	:@C5@,D	95999	@79EB5,B;
M z	=9C5C=D	:A;5:;	:AA5B;B	95999	=7C9;5,D9
dx x t x	;EC5D::	:;C5DB	:C95B;A	95999	;7EA@5=D@
_u t x	=7,BE5C;@	E;E5=DD	:79E=5@=;	:7,@B5E9=	@=B5BD=
^ x t x	B7:@,5=BB	:7:@5D9C	ADD5EB	@7@=E5=B=	95999
Pxux t x	B7=@C5:=	C9A5E=;	:CA5@AA	A7@BA5C;A	95999
fafNY	**=B7DF;5999**	**D7E:D8EEC**	**C79D95EAC**	**;:7F9=5,CE**	**;:7FB5:A**

Zt zt tt 8xz vt z	ht t z
Q x z x ss 8 st s	B959 8 A@59 h
a x x aOd	=959 h
Uus us x v Rg	B7C:B5E;@ h 8s
Px us us x us x u	B79C95D@B h 8s
P s s ss s x xs Rg	;59;9; x
Mu x x y us s ux x	=D5D9.

N s s x x y u s xs us s s x x u 7Q x z s vx us us s v ts x x x x s t s u suxxs usv 7Pyx x s ys s vx ux x x x x x s s v x xs5s x x s su v t v xu s7a x vx x vx us x s s s s vx us us x s s x us u u z u7

O7, Yvz z z v bz t 6 x v z txt z

bt t z	e:	e;

Px xFcQMYUkMcQdUdeQZ PQac_PfOQcQdUde_OMcQMQ^QcSUQUQYQOecUDQPU dfcdQcQSQ^QcMNUYQPQeUd_YMc aQ^ecf O_^dfZ ac_acUf MYO_Zf^QUaQcUWZ5VfPQefYeUZUd

bt t z	e:	e;
a x x PO s s	@A5BA9 h	@:5A99 h
a x x x s x MO	A9 h	B9 h
_ x s x 8 u s x	d v6Q 8=9 z svx	d v6Q 8=9 z svx
d sys s v t s	=99 ;	=99 ;
a x vx Rg	:@	:B5A.
Ns s vx sv s x	agSUd6dMcMT=	agSUd6dMcMT=

Y t	Vtxzz utt1i 8 ;2	b x v z e:1i 2	b x v z e;1i 2
Ud s x	@D5ACD	:7CEA59C@	:7AD@5@A9
Rxt s x	DB5B=9	=7,:C5D@9	;7D@95,C=
Z s x	:@95AC	A7,:C59D9	@7B9@5E==
M x	:@95=DE	A7.9=5,9;	@7A9@5@.9
Z s	:CE5C.E	B7=@B59C9	A7B9:5@@B
U x	;:;5@C=	C7,=E5B=A	B7=E95B@
U x	;9;5=;=	B7CE@5,DE	A7EEC59C.
M z	:D;5D@9	B7.DE5=@,	A7@B=59D
dx x t x	:@@5A@B	A79;C5=9B	@7@=C5@,A
_u t x	:9C5DC9	=7DED5=99	=7@@95DDD
^ x t x	C=5A9=	;7C9A5=DD	;7=DC5E@E
Pxux t x	=C5EB=	:7=D@5BE9	:7,;;5,:B
fafNY N_gNY	**:7BBC5DF:**	**BA7F:E5,:D**	**AE7ADA5===**

a v u s xuyus d: x x :7,9=59;D h 8 h 8s 7Os u x s s x x z s s s uvx s vx x x z s x xu us v s7a x xs x us s x vx us v s x x u x s sv x v u x y s us5u y vs x s xs ux x x xu ux7

O7,Yvz z z v bz t 6u t t e:

Y t	P 1i 2	Sh x zv 1i 2	ORee t v 1i 2	V 1i 2	Y t z1i 2
Ud s x	E7D:@5==:	:7=;D5D@,	@B;5=DE	D79;=5EE	95999
Rxt s x	D7DB@5AAC	:7DA:5D9B	:7EA5A:C	A7D:C5,=A	=C5BD;
Z s x	A79AA5DBC	:7BCB5@9	;79@95@@B	:7==E5,D:	:7,@B5DC9
M x	@7DE;5DCA	:7D9:5=@.	:7DD=5EE=	:7,9C5@@.	:7,9A5=A=

Px xFcQMYUkMcQdUdeQZ PQac_PfOQcQdUde_OMcQMQ^QcSUQUQYQOecUDQPU dfcdQcQSQ^QcMNUYQPQeUd_YMc aQ^ecf O_^dfZ ac_acUf MYO_Zf^QUaQcUWZ5VfPQefYeUZUd

Y t	P 1i 2	Sh x zv 1i 2	ORee t v 1i 2	V 1i 2	Y t z1i 2
Z s	@CA5D@B	; @95=CB	; =A5@C9	95999	A7CD@5DBE
U x	@B95@EB	; @B5; A	; : @5=C:	95999	B7CA@5@B9
U x	@CA5D@B	; @C5DAD	; ; C5EDD	95999	B7, E=5::
M z	@CA5D@B	; =A5B=	; @95BD=	95999	A7BDC5A@
dx x t x	@B95@EB	: EB5B=D	; B=5DAE	95999	@7A=D59C@
_u t x	A79AA5DBC	: 7@=A5@@	: 7CDB5; :=	: 7D=@5A::	A@C5BDB
^ x t x	E7@EC5C=E	: 7C; 95AC9	E9=5E@=	B7DC=5; ; C	95999
Pxux t x	E7D: @5==;	: 79DC5@CB	; BC5@E;	D7@AE5=B@	95999
fafNY	**BB7=AA5999**	**:; 79CD5=DF**	**F7D; ; 5=CA**	**==7BBA5; BD**	**=; 79FB5CAC**

Zt zt tt 8xz vt z	ht t z
Q x z x ss 8 st s	: 995 9 8 E95 9 h
a x x aOd	A95 9 h
Uus us x v Rg	: 97CAA5E; h 8s
Px us us x us x u	E7C; ; 5=B@ h 8s
P s s s s x xs Rg	; 5E9B x
Mu x x y us s ux x	=E5=C.

N s s x x y u s xs us s s x x u 7 Q x z s vx us us s v ts x x x x s t s u sux x s usv 7P yx x s ys s vx ux x x x x x s s v x xs5 s x x s su v t v xu s 7a x vx x vx us x s s s s vx us us x s s x us u u z u7

OZ= et t Yvz 6 x v z txt z

bt t z	e:	e;
a x x PO s s	: =5 99 h	:; 5999 h
a x x x s x MO	: A h	; 9 h
_ x s x 8 u s x	d v6Q 8 =9 z svx	d v6Q 8 =9 z svx
d sys s v t s	=99 ;	=99 ;
a x vx Rg	: @	: B5A.
Ns s vx sv s x	agSUdl6dMcMT=	agSUdl6dMcMT=

Y t	Vtxz z utt 1i 8 ;2	b x v z e: 1i 2	b x v z e; 1i 2

Px xFcQMYUkMcQdUdeQZ PQac_PfOQcQdUde_OMcQMQ^QcSUQUQYQOecUDQPU dfcdQcQSQ^QcMNUYQPQeUd_YMc aQ^ecf O_^dfZ ac_acUf MYO_Zf^QUaQcUWZ5VfPQefYeUZUd

Y t	Vtxzz utt1i 8;2	b x v z e: 1 i 2	b x v z e; 1 i 2
Usl s x	@D5ACD	A: E59AD	@AD5A@
Rxt s x	DB5B=9	E=95@B9	D; :5, D@
Z s x	:@95AC	:7A9D5AA=	:7==:5A@C
M x	:@95=DE	:7@CA5B; A	:7=9; 5@D9
Z s	:CE5C:E	:7D=A599D	:7B:E5BEA
U x	; :; 5@C=	; 79E=5=DD	:7D@C5CAD
U x	; 9; 5=; =	:7EB@5B:@	:7C=@59E=
M z	:D; 5D@9	:7CDE5BDE	:7ACE5BE@
dx x t x	:@@5A@B	:7@A=5BCE	:7, D=5::
_u t x	:9C5CC9	:7:; C5, :E	EE@5EAB
^ x t x	C=5A9=	CD; 5, D:	BE95@E:
Pxux t x	=C5EB=	@995=E;	=A=5@;
fafNY N_gNY	**:7BBC5DF:**	**:BZEDF5FCC**	**:A79:C5CDB**

a v u s xuyus d: x x :7, 9=59; D h 8 h 8s 7Osu x s s x x z s s s uvx s vx x x z s x xu us v s7a x xs x us s x vx us v s x x u x s sv x v u x y s us5u y vs x s xs ux x x xu ux7

O7=et t Yvz 6u t t e:

Y t	P 1 i 2	Sh x zv 1 i 2	ORee t v 1 i 2	V 1 i 2	Y t z1 i 2
Usl s x	; 7DBA5C9A	=DA5E; :	:=; 5B=9	; 7=@C5A@	95999
Rxt s x	; 7ADD5=CE	A=E59; =	=@B5DBE	:7C9; 5@DB	B59; B
Z s x	:7@CB5, C;	@DD5C; ;	B9B5DD@	=D95BBB	==B5E9C
M x	:7@; D5BA:	A; @5D@9	AAE5=D;	=@@5@; D	=; D5=; D
Z s	:=D5E@=	C95AB	BD5CDC	95999	:7BC:5; =
U x	:=@5@B:	C:5DA=	B; 5B9D	95999	:7EA:5C:D
U x	:=D5E@=	C, 5=B:	BB5AD=	95999	:7D:D5, C;
M z	:=D5E@=	BD5B@@	C95, EE	95999	:7B@=5BA
dx x t x	:=@5@B:	AC5@9=	CC59AE	95999	:7=:95D; B
_u t x	:7@CB5, C;	@:D5=:	A=95B=@	A; C5A9C	:=E5C9E
^ x t x	; 7CC=5, B=	A995DC;	; AE59DD	; 79:=5=9=	95999
Pxux t x	; 7DBA5C9B	=:A5B9B	CB5=9C	; 7@C=5CE=	95999

Px xFcQMYUkMcQdUdeQZ PQac_PfOQcQdUde_OMcQMQ^QcSUQUQYQOecUDQPU dfcdQcQSQ^QcMNUYQPQeUd_YMc aQ^ecf O_^dfZ ac_acUf MYO_Zf^QUaQcUWZ5VfPQefYeUZUd

Y t	P 1i 2	Shx zv 1i 2	ORee t v 1i 2	V 1i 2	Y tz1i 2
fafNY	:C7C95999	=7B:=5B=;	;7EBD5=:	F7DEF5==D	F7;9C59DB

Zt zt tt 8xz vtz	ht tz
Q x z x ss 8 st s	=959 8;C59 h
a x x aOd	:A59 h
Uus us x v Rg	=7B95=B9 h 8s
Px us us x us x u	;7DAC5=: h 8s
P s s s s x xs Rg	;5;C;C x
Mu x x y us s ux x	=E5@.

N s s x x y u s xs us s s x x u 7 Q x z s vx us us s v ts x x x x s t s u sux x s usv 7P yx x s ys s vx ux x x x x x s s v x xs5 s x x s su v t v xu s7a x vx x vx us x s s s s vx us us x s s x us u u z u7

OTA ev t t v t z z V6Vh vt W6 x v z txt z

bt t z	e:	e;
a x x PO s s	;;5AA9 h	;95A99 h
a x x x s x MO	;@ h	@9 h
_ x s x 8 u s x	d v6Q 8=9 z svx	d v6Q 8=9 z svx
d sys s v t s	=99 ;	=99 ;
a x vx Rg	:@	:B5A.
Ns s vx sv s x	agSUdl6dMcMT=	agSUdl6dMcMT=

Y t	Vtxz z utt 1i 8;2	b x v z e:1i 2	b x v z e;1i 2
Usl s x	@D5ACD	DDB5C;=	CD;5BD9
Rxt s x	DB5B=9	:7ADE5A=A	:7@9=59;B
Z s x	:@95AC	;7ACC5:;	;7;C@5C;B
M x	:@95=DE	;7A;95DAE	;7;;A59C9
Z s	:CE5C:E	=7:=@5D9B	;7CBB5ECE
U x	;:;5@C=	=7ACB5;9A	=7:AB5ADC
U x	;9;5=;=	=7=AB5;:A	;7EB;5@9E
M z	:D;5D@9	=79AC5=DB	;7BED5B@@

Px xFcQMYUkMcQdUdeQZ PQac_PfOQcQdUde_OMcQMQ^QcSUQUQYQOecUOQPU dfcdQcQSQ^QcMNUYQPQeUd_YMc aQ^ecf O_^dfZ ac_acUf MYO_Zf^QUaQcUWZ5VfPQefYeUZUd

Y t	Vtxzz utt1i 8 ;2	b x v z e: 1 i 2	b x v z e; 1 i 2
dx x t x	:@@5A@B	;7@D=5=BD	;7.E:5ED:
_u t x	:9C5DC9	:7E;A5BBB	:7BEE5C:B
^ x t x	C=5A9=	:7==B5=EC	:7.CE5ADE
Pxux t x	=C5EB=	BD@599=	B9=5D@A
fafNY N_gNY	**:7BBC5DF:**	**;D7.;E5;DC**	**;=7FAB5B;**

a v u s xuyus d: x x :7,9=59;D h 8h 8s 7Osu x s s x x z s s s uvx s vx x x z s x xu us v s7a x xs x us s x vx usv s x x u x s sv x v u x y s us5u y vs x s xs ux x x xu ux7

OTAev t t v t z z V6Vh vt W6 u t t e:

Y t	P 1 i 2	Shx zv 1 i 2	ORee t v 1 i 2	V 1 i 2	Y t z1 i 2
Ud s x	@7E:;5@DB	BB95,E=	;;A5==	@79;C59B9	95999
Rxt s x	@7@=C59D@	E;;5EE;	ADC5,B9	;7E;B5D=;	:@59=;
Z s x	;7A=95BC@	D=C5=B=	:79:B59@E	BCC5,B;	AEC5@9D
M x	;7@@E59=E	DEE599C	E=B5EAD	B:=59C@	ACE5,:A
Z s	;=D5D:	:;95,@B	::C5E=A	95999	;7DA=5DAB
U x	;=95@ED	:;=5BA	:9C5==;	95999	=7===5=@D
U x	;=D5D:	:;@59=A	::@5@B	95999	=7.9A5=A;
M z	;=D5D:	::C5BAD	:;95A;=	95999	;7D9B5,9C
dx x t x	;=95@ED	ED5=E=	:=;59@	95999	;7,=D5@D@
_u t x	;7A=95BC@	C:B5,:;	DDE59;:	E;A5@@:	;AB5=9D
^ x t x	@7CA@59:D	DAC5BEC	@=E5ADA	=7@AB5C=B	95999
Pxux t x	@7E:;5@DC	A=E5DB=	:;E5C;B	@7,@,5DED	95999
fafNY	**;D7D9;5999**	**C79:C5F;B**	**A7E:B5DD;**	**:C7ECF5=9=**	**:B7DEA5,:9**

Zt zt tt 8xz vt z	ht t z
Q x z x ss 8 st s	A959 8 @A59 h
a x x aOd	;A59 h
Uus us x v Rg	A7=;C5@: h 8s
Px us us x us x u	@7D:A5DC; h 8s
P s s s s x xs Rg	;5,:C= x

Px xFcQMYUkMcQdUdleQZ PQac_PfOQcQdUde_OMcQMQ^QcSUQUQYQOecUDQPU dfcdQcQSQ^QcMNUYQPQeUd_YMcaQ^ecf O_^dfZ ac_acUf MYO_Zf^QUaQcUWZ5VfPQefYeUZUd

Zt zt tt 8xz vt z	ht t z
Mu x x y us s ux x	=E59.

N s s x x y u s xs uss s x x u 7 Q x z s vx us us s v ts x x x x s t s u suxxs usv 7P yx x s ys s vx ux x x x x x s s v x xs5 s x x s su v t v xu s 7a x vx x vx us x s s s s vx us us x s s x us u u z u7

OZBev t t vt zz V6Vh vt WW6 x v z txt z

bt t z	e:	e;
a x x PO s s	=B5=99 h	==5999 h
a x x x s x MO	@9 h	=9 h
_ x s x 8 u s x	d v6Q 8=9 z svx	d v6Q 8=9 z svx
d sys s v t s	=99 ;	=99 ;
a x vx Rg	:@	:B5A.
Ns s vx sv s x	agSUdl6dMcMT=	agSUdl6dMcMT=

Y t	Vtxzz utt1i 8;2	b x v ze:1i 2	b x v ze;1i 2
Usl s x	@D5ACD	:7@;C5@9D	:7;AE5E;@
Rxt s x	DB5B=9	;7AAD5CB@	;7;AD5A=9
Zs x	:@95AC	@7:@D5A;:	=7BB:5CA@
M x	:@95=DE	@79AC5EBD	=7AD:5D;9
Zs	:CE5C:E	A79@B5;C=	@7@A@5B;
U x	;:;5@C=	A7CAB5D:D	A79D:5==A
U x	;9;5=;=	A7@9;5BDD	@7CBD5CAA
M z	:D;5D@9	@7E;:5B@A	@7=@@5AD
dx x t x	:@@5A@B	=7EEC5B:C	=7A;D5AAA
_u t x	:9C5CC9	=79EE5DA=	;7C=B5;D
^ x t x	C=5A9=	;7A:5;C=	:7DED5DA:
Pxux t x	=C5EB=	:79:59CD	EC:5DD;
fafNY N_gNY	**:7BBC5DF:**	**A=7CCF5F9C**	**=E7BAB5EBB**

a v u s xuyus d: x x :7,9=59;D h 8 h 8s 7Osu x s s x x z s s s uvx s vx x x z s x xu us v s7a x xs x us s x vx usv s x x u x s sv x v u x y s us5u y vs x s xs ux x x xu ux7

Px xFcQMYUkMcQdUdeQZ PQac_PfOQcQdUde_OMcQMQ^QcSUQUQYQOecUDQPU dfcdQcQSQ^QcMNUYQPQeUd_YMcaQ^ecf O_^dfZ ac_acUf MYO_Zf^QUaQcUWZ5VfPQefYeUZUd

OZBev t t v t zz V6Vh vt VW6 u t t e:

Y t	P 1 i 2	Sh x zv 1 i 2	ORee t v 1 i 2	V 1 i 2	Y t z1 i 2
Ud s x	C7D:A5DDA	:79AC5=::	=BA59A	B7=E=5=BE	95999
Rxt s x	C79AE5@:E	:7@C@599C	E; @5@AE	@7BB95EA=	AC5AD9
Z s x	@79; B5=:@	:7==@5A; C	:7A@D5E=:	:7:@, 5DAA	:79CA5E=@
M x	=7DEB5@==	:7@=@59A;	:7@=; 59E@	:79=95, DC	:79=95C9
Z s	=CD5E@C	:E:5@:@	:DC5A==	95999	@7AEE5=@@
U x	=BB5C; =	:EB5999	:C95C; =	95999	A7=C95@@9
U x	=CD5E@C	:EC5=D:	:D:5ABC	95999	A799=5ABC
M z	=CD5E@C	:DC5, BC	:E:5BD9	95999	@7A; ; 59; C
dx x t x	=BB5C; =	:AB5ADE	; :95=@	95999	=7B9D599E
_u t x	@79; B5=:@	:7:@, 5A:A	:7=AD5=AC	:7A; A5@@:	A9=5C:
^ x t x	C7AB=5BB=	:7=BE5ABB	C:=5AEB	A7@D95A9:	95999
Pxux t x	C7D:A5DD@	DBA5, ; =	; :; 5, C9	B7C=D5, E:	95999
f a f NY	**AA79DA5999**	**F7C9B5EB;**	**D7AFC5AB9**	**; C7FD:5CFD**	**; B7DD95, A:**

Z t z t t t 8 x z vt z	h t t z
Q x z x s s 8 st s	CA59 8 BC5A h
a x x a Od	=C5A h
Uus us x v Rg	D7, E=5D:@ h 8s
Px us us x us x u	C7@EB5@A9 h 8s
P s s s s x xs Rg	; 59BB: x
Mu x x y us s ux x	=D5D9.

N s s x x y u s xs us s s x x u 7 Q x z s vx us us s v ts x x x x s t s u sux x s us v 7P yx x s ys s vx ux x x x x x s s v x xs5 s x x s su v t v xu s 7a x vx x vx us x s s s s vx us us x s s x us u u z u7

Px xFcQMYUkMcQdUdeQZ PQac_PfOQcQdUde_OMcQMQ^QcSUQUQYQOecUOQPU dfcdQcQSQ^QcMNUYQPQeUd_YMcaQ^ecf O_^dfZ ac_acUf MYO_Zf^QUaQcUWZ5VfPQefYeUZUd

O7C O t t z t t zv 6e:

Y t	b x v z1 i 2	P 1 i 2	Sh x zv 1 i 2	ORee t v 1 i 2
Ud s x	A7CEB5@,	=:7CAA5@:D	@7, E@5=DB	:7@DB59AC
Rxt s x	:97=E95==	;D7BD; 5=:=	A7EDC5C:E	=7D9; 5=D=
Z s x	:B7D@A5A:;	:B7=AD5DA:	A7@, :5BEE	B7@AD5C:E
M x	:B7@CC5D::	:A7D=:5@C	A7D; A5D@A	A7EBB5B@
Z s	;97@E95E;B	:7A=E5BAB	CCC5BDE	CB:5EBC
U x	;=7=CB5C;	:7@DE5EE9	CEB5==A	BE=5BA@
U x	;:7E=D5DD	:7A=E5BAB	D9:5E@A	C=C5C::
M z	:E7ED@5DB;	:7A=E5BAB	CB95D@@	CCD5D:;
dx x t x	:B7, =; 5D@B	:7@DE5EE9	B=B5, 9E	DA=5DD:
_u t x	:; 7ADC5, D=	:B7=AD5DA:	@7B@5=E9	A7BAC5BAC
^ x t x	D7C=A5@C:	=97C=:59A9	A7AB=5A:;	;7E9@5@9D
Pxux t x	@7@C:59@B	=:7CAA5@;;	=7A:@599	DB:5, A:
f a f NY	**:DD7=; C5, F:**	**:DF79D, 5999**	**=F79; :5BDB**	**=97FC, 5BCA**

Y t	Vvt vt z Sh 1 i 2	V 1 i 2	Y t z1 i 2	b z xz ORee 1 i 2
Ud s x	:7A9:5CAC	;A7EC@5ECB	95999	:AC5@A9
Rxt s x	@7, ;@5DBE	:D7DE; 5, ::	:CC5A@@	@, ;5@DC
Z s x	C7, AA5, C@	@7@CD5@==	@7.BD5A=D	C, :5BDA
M x	B7B=E5=A9	@79=E5, =C	@79:;5C:A	BB=5@=A
Z s	:79=D5DE	95999	:D7BCA59@D	E@5@E=
U x	CC=5A:@	95999	;:7D9B5=; =	CC5, :B
U x	D:E5BCE	95999	;97=:B5AB@	D:5EBD
M z	DB; 5DED	95999	:D7=B:5, ;9	DB5@9@
dx x t x	E@B5CB:	95999	:@7B@E5CCB	E@5CBD
_u t x	B79B; 5==B	B79AE5D9@	:7DD=5AAC	B:C5=B
^ x t x	=7.C:5EAE	;;7, B=5=9	95999	=:E5DD:
Pxux t x	EAB5E@A	;C7=D959C:	95999	EA5BEA
f a f NY	**=A7, B=5A=:**	**:9F79ED5EC;**	**:9A79B:5, EB**	**=7A=; 5C:D**

Px xFcQMYUkMcQdUdleQZ PQac_PfOQcQdUde_OMcQMQ^QcSUQUQYQOecUDQPU dfcdQcQSQ^QcMNUYQPQeUd_YMcaQ^ecf O_^dfZ ac_acUf MYO_Zf^QUaQcUWZ5VfPQefYeUZUd

Mz xzs xs s xs s t s yxus s s s x 7e s x s s x vx us su s x u x z s x x vx su vs x5 s x x z s t s x x x s yx s s x usv 6 x xs s s7P yx x x x x s x s uyx sy s x v xs x x s x x s s 7

Px xFcQMYUkMcQdUdeQZ PQac_PfOQcQdUde_OMcQMQ^QcSUQUQYQOecUOQPU dfcdQcQSQ^QcMNUYQPQeUd_YMcaQ^ecf O_^dfZ ac_acUf MYO_Zf^QUaQcUWZ5VfPQefYeUZUd

OZDO t t z t t zv 6e;

Y t	b x v z1i 2	P 1i 2	Shx zv 1i 2	ORee t v 1i 2
Usl s x	A7:B59AB	=; 7@A@5B;	@79@959=	:79=C5EDB
Rxt s x	E7C:599;	; E7=:=5@=B	A7D; ; 59@D	; 7D@, 5D::
Z s x	:@7DBD5E=E	:B7C:D5D::	A7@C5=DD	A7C:C5A:@
M x	:@7A@@5=B:	:B7CE5@E@	A7CAD5ACD	A7CE5A@E
Z s	:D79DB5AED	:7AC=5A=A	CDE5, =;	CD@5=9=
U x	; 97B==5=9:	:7A; ; 5CCB	D::5=:9	C::5@BB
U x	:E7=B@59=C	:7AC=5A=A	D:C5=C	CAB5=ED
M z	:C7B=E5E:A	:7AC=5A=A	CC=5AC=	CEE5EB;
dx x t x	:@7=; D59C;	:7A; ; 5CCB	B@D59:@	DC@5CB;
_u t x	::7:95==C	:B7C:D5D::	@7AE; 5DDC	@7EE:5AB9
^ x t x	C7C:95@DA	=:7@9C5, A=	A7@:@5D; 9	:7EC, 5A=E
Pxux t x	=7E@B5@=:	=; 7@A@5B=	=7, B959CB	AD=5@9;
fafNY	**:BC7B:F5B==**	**:E=79:; 5, ED**	**=E7:AB5CD**	**; C7, B; 5, B;**

Y t	Vvt vt z Sh 1i 2	V 1i 2	Y t z1i 2	b z xz ORee 1i 2
Usl s x	:79CA5EA=	; C7=CB59C;	95999	:C:5D@
Rxt s x	=7=@@5@D=	; 97B@D5ACD	@5@C:	A9:5BC;
Z s x	B7CCC5@EE	A7AD=5E9D	; 7BC@59A;	:79:; 5EA@
M x	B79=5E@	A7, @:5=BC	; 7BD; 5ADE	E:@5CDD
Z s	:7=; 5C99	95999	:B7:B@5BBA	:A@5CEA
U x	D@95, CB	95999	:D7ED:5C:A	:; A5D9C
U x	DDE5DD9	95999	:C7BAC59; 9	:==5@D;
M z	E=D5=C@	95999	:A7E; C5EBD	:@95EAA
dx x t x	:79; C59E=	95999	:; 7BA; 5EBA	:A@5, ::
_u t x	A7B; D5=; ;	C7:=@5=B@	DDE5; D	DB:5D:;
^ x t x	; 7, EA5BBA	; @79:E5DE@	95999	=@B5@B
Pxux t x	BDB5=AA	; D7B:95BDA	95999	:9; 5EA=
fafNY	**=97D=F5DFA**	**::E7C:A5ECF**	**ED7C=A5BD;**	**A7C; :5A:E**

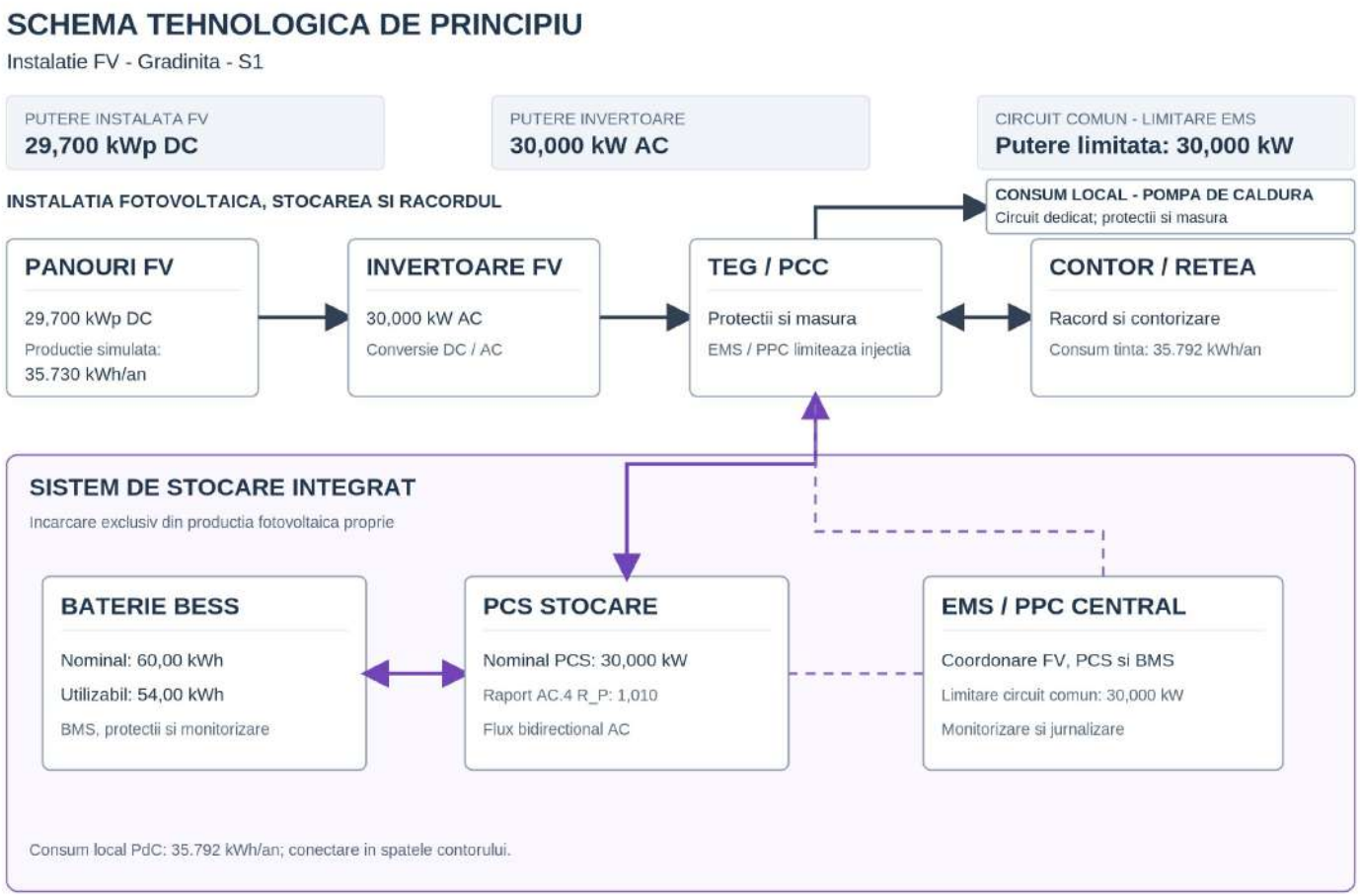
Px xFcQMYUkMcQdUdleQZ PQac_PfOQcQdUde_OMcQMQ^QcSUQUQYQOecUDQPU dfcdQcQSQ^QcMNUYQPQeUd_YMcaQ^ecf O_^dfZ ac_acUf MYO_Zf^QUaQcUWZ5VfPQefYeUZUd

Mz xzs xs s xs s t s yxus s s s x 7e s x s s x vx us su s x u x z s x x vx su vs x5 s x x z s t s x x x s yx s s x usv 6 x xs s s7P yx x x x x s x s uyx sy s x v xs x x s x x s s 7

Px xFcQMYUtMcQdUdeQZ PQac_PfOQcQdUde_OMcQMQ^QcSUQUQYQOecUDQPU dfcdQcQSQ^QcMNUYQPQeUd_YMc aQ^ecf O_^dfZ ac_actf MY O_Zf^QUaQcUWZ 5Vf PQef YeUZUd

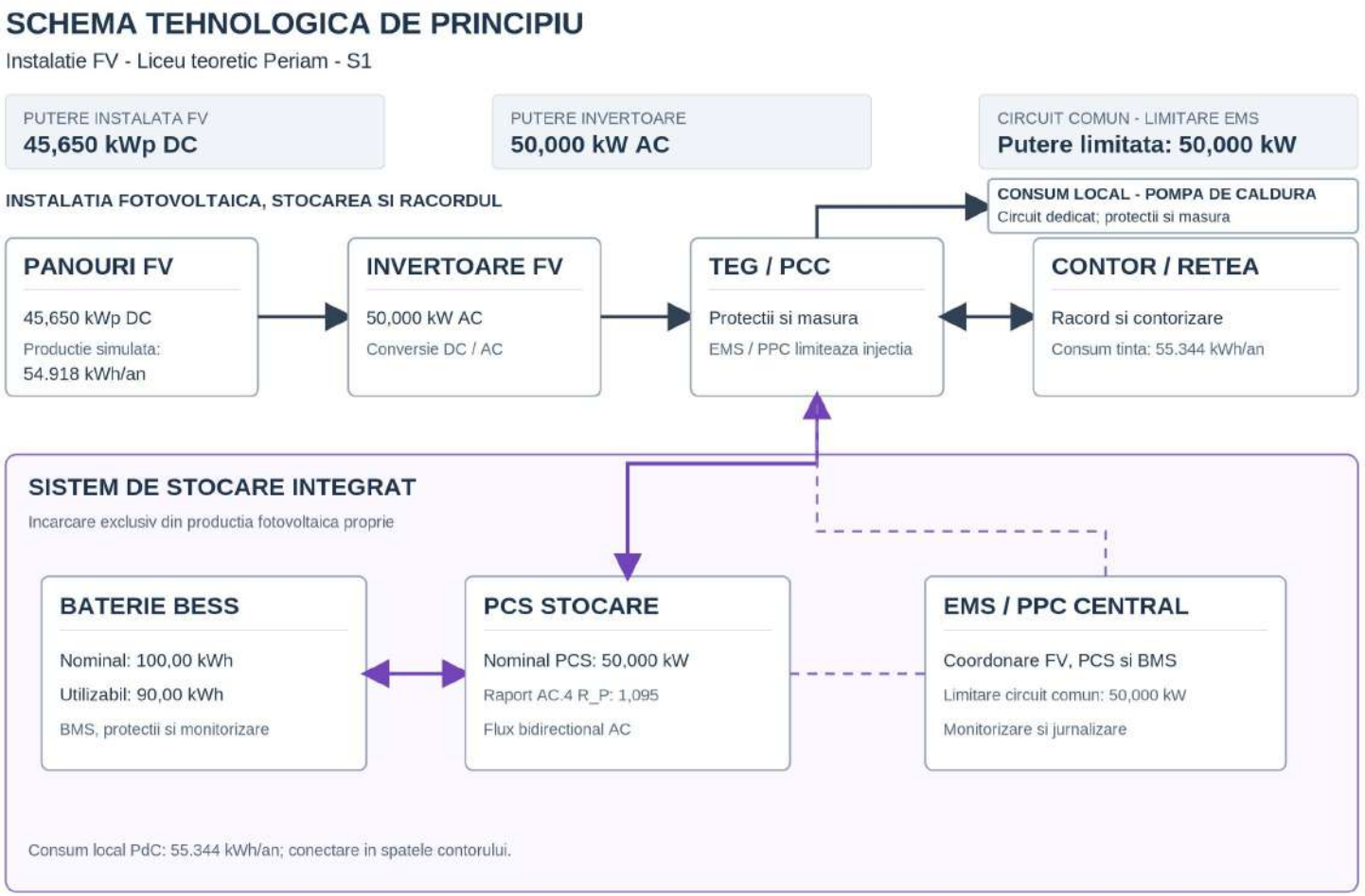
N_Rj N P7ePURZ R fRU_aYaTVPR RYRPfdVPR 6 e: eVe;

PZ e: 6 T tx t



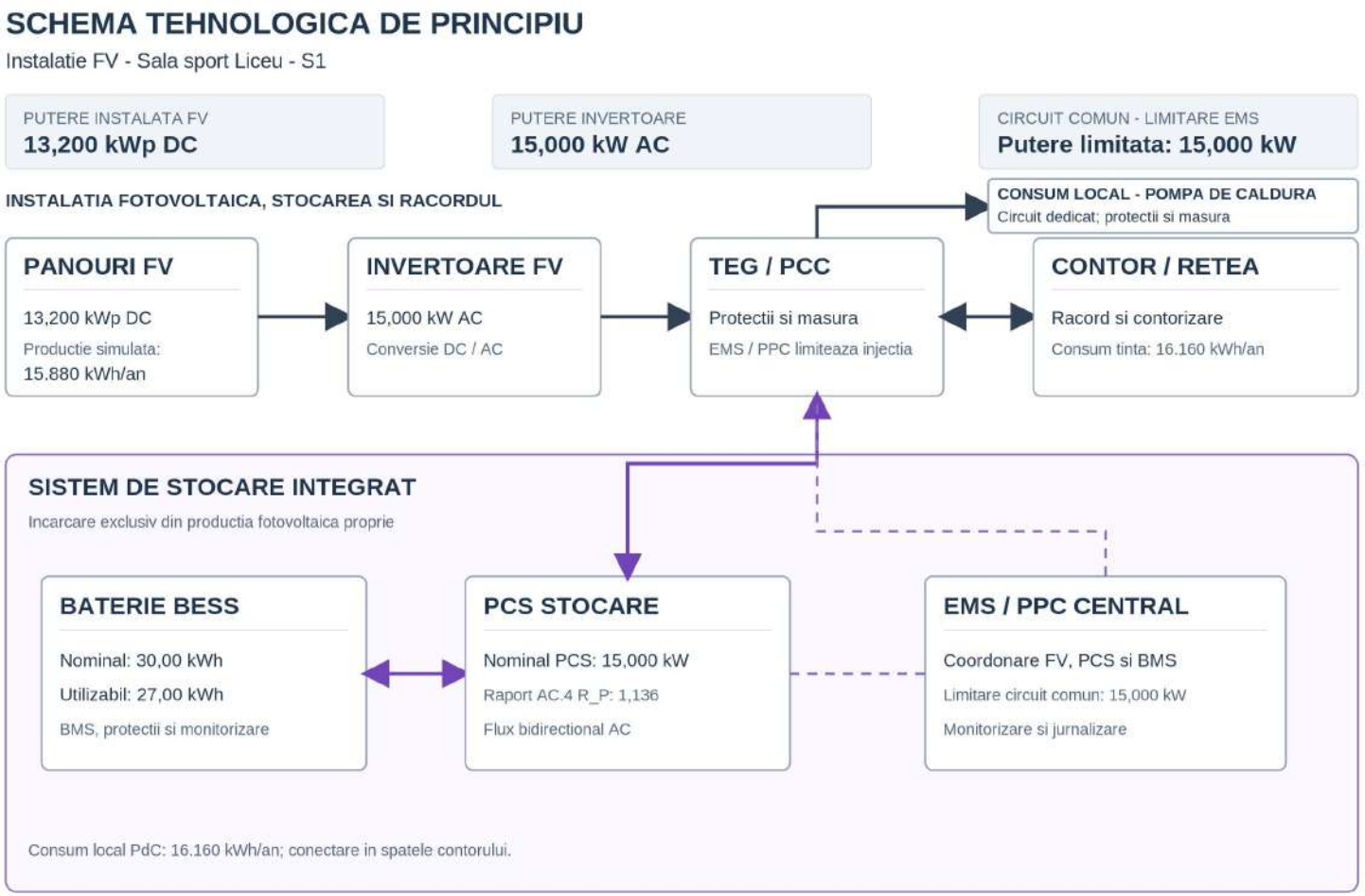
Px xFcQMYUMcQdUdeQZ PQac_PfOQcQdUde_OMcQMQ^QcSUQUQYQOecUDQPU dfcdQcQSQ^QcMNUYQPQeUd_YMcaQ^ecf O_^dfZ ac_actf MrO_Zf^QUaQcUWZ5VfPQefYelZUd

PZ e: 6 Yvz z z v bz t



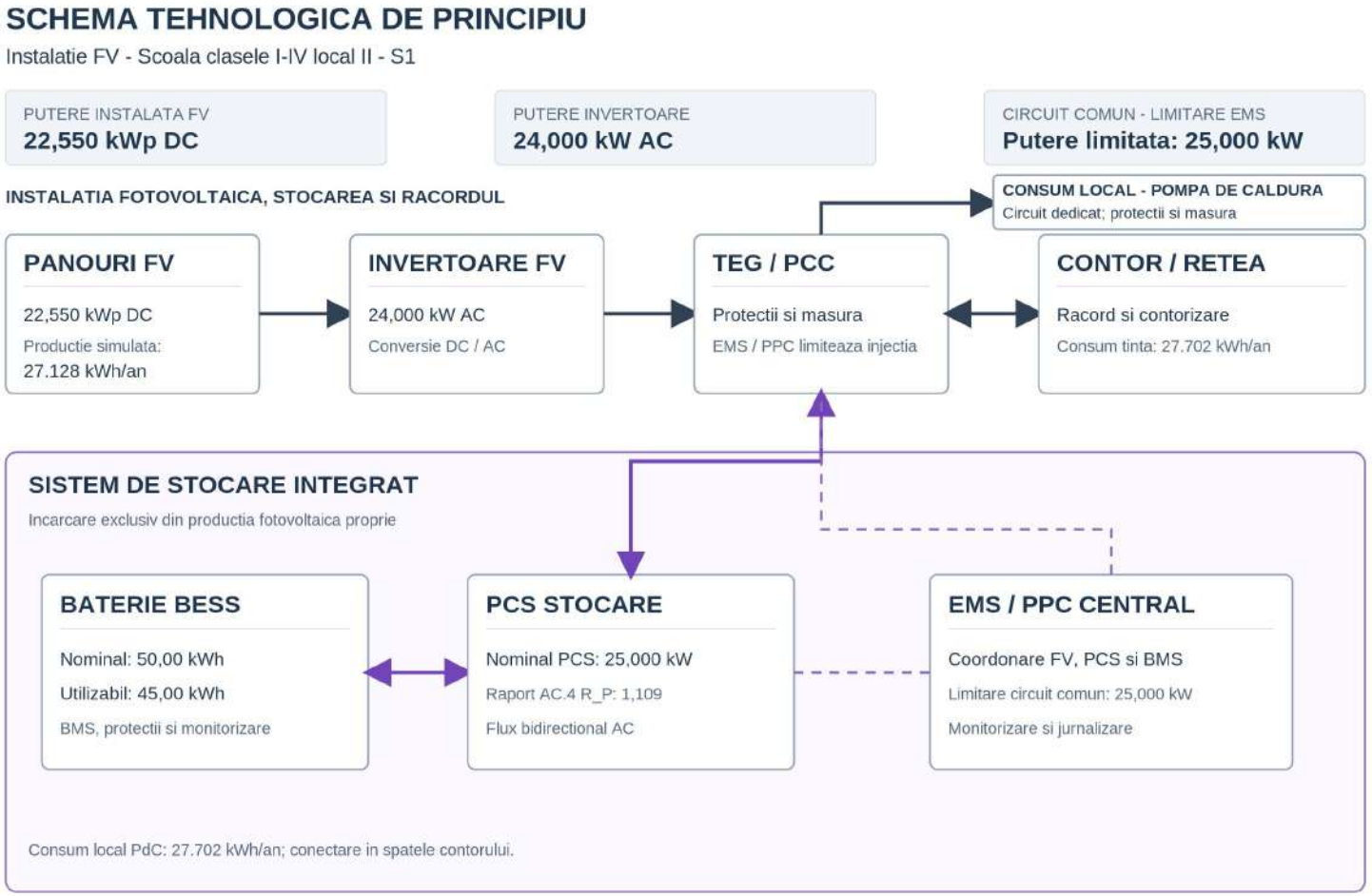
Px xFcQMYUMcQdUdeQZ PQac_PfOQcQdUde_OMcQMQ^QcSUQUQYQOecUDQPU dfcdQcQSQ^QcMNUYQPQeUd_YMcaQ^ecf O_^dfZ ac_actf MrO_Zf^QUaQcUWZ5VfPQefYelZUd

PZ= e: 6 et t Yvz



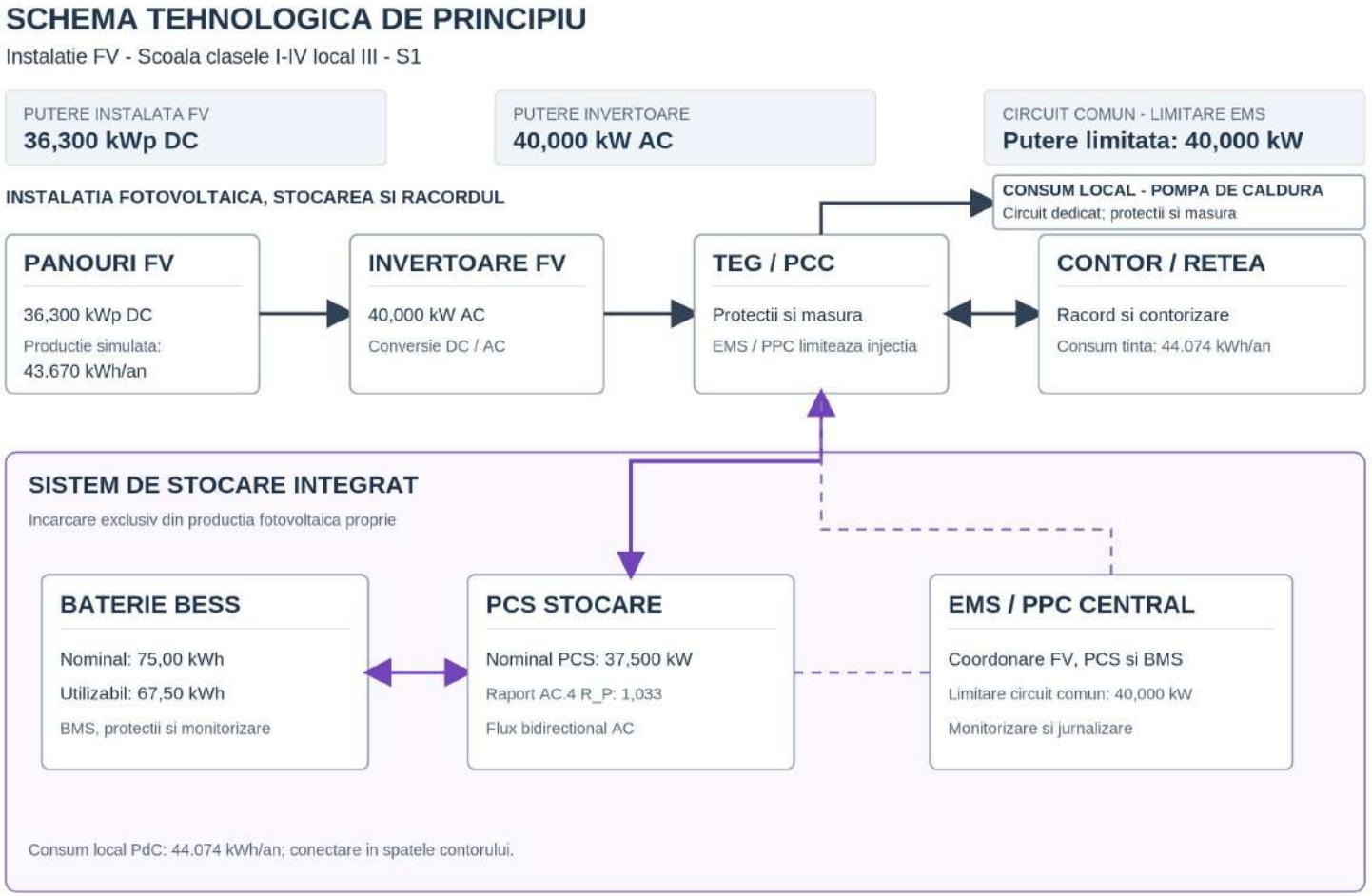
Px xFcQMYUMcQdUdeQZ PQac_PfOQcQdUde_OMcQMQ^QcSUQUQYQOecUDQPU dfcdQcQSQ^QcMNUYQPQeUd_YMcaQ^ecf O_^dfZ ac_actf MrO_Zf^QUaQcUWZ5VfPQefYelZUd

P7Ae: 6evttvtzzV6Vh vt W



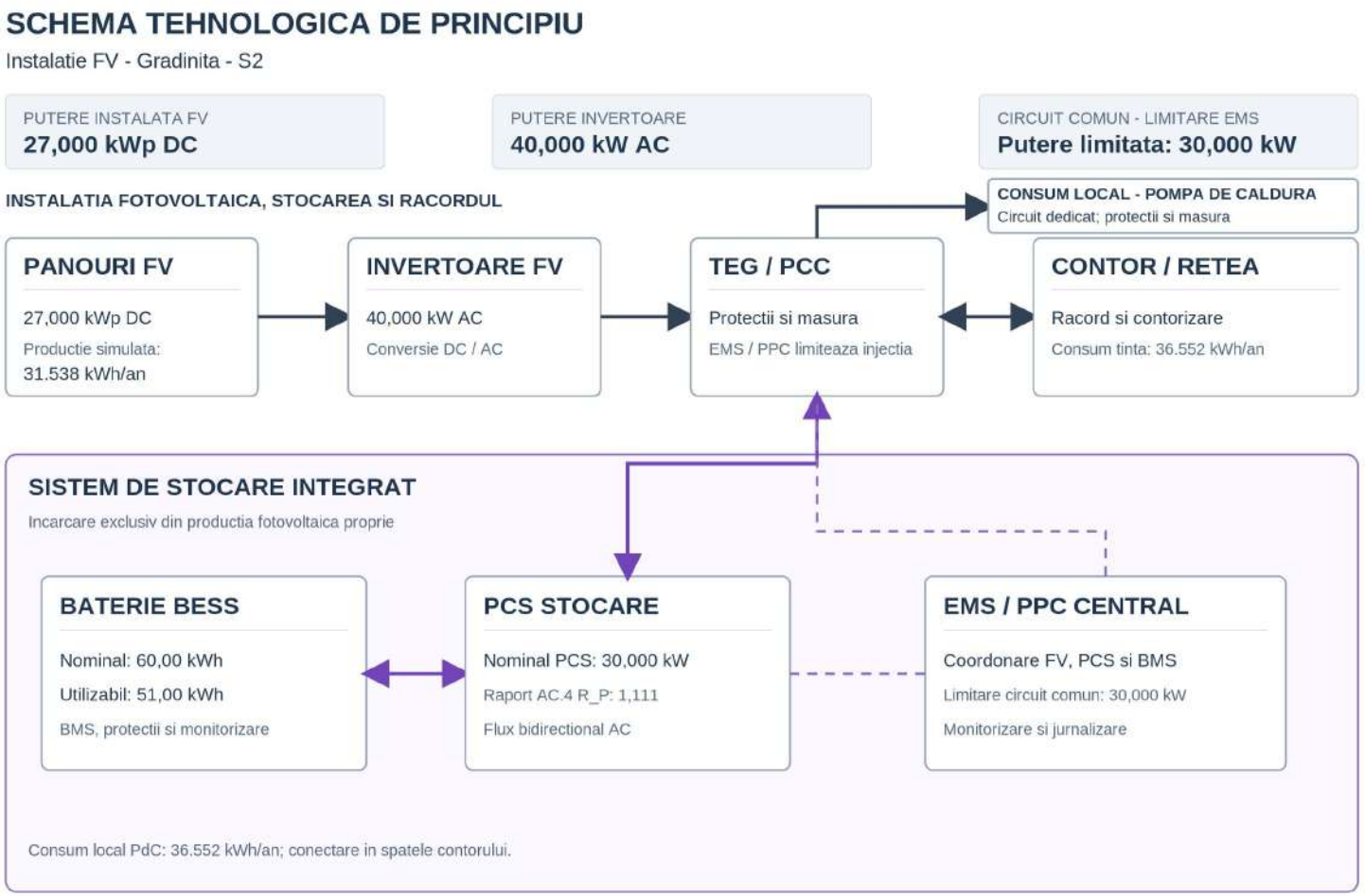
Px xFcQMYUMcQdUdeQZ PQac_PfOQcQdUde_OMcQMQ^QcSUQUQYQOecUDQPU dfcdQcQSQ^QcMNUYQPQeUd_YMcaQ^ecf O_^dfZ ac_actf MY O_Zf^QUaQcUWZ 5Vf PQef YelZUd

PZBe: 6ev t t v t zz V6Vh vt VW



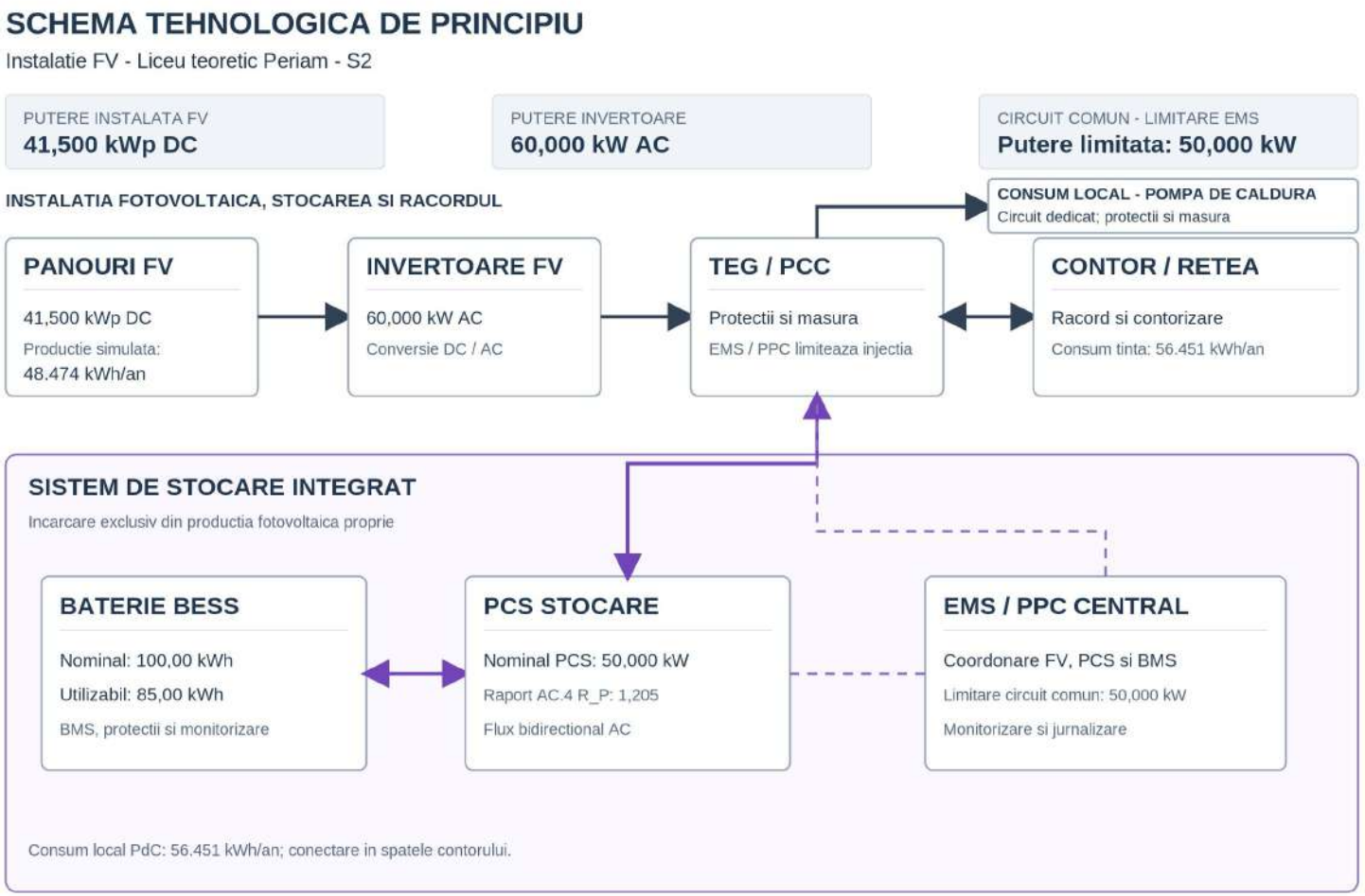
Px xFcQMYUMcQdUdeQZ PQac_PfOQcQdUde_OMcQMQ^QcSUQUQYQOecUDQPU dfcdQcQSQ^QcMNUYQPQeUd_YMcaQ^ecf O_^dfZ ac_actf MrO_Zf^QUaQcUWZ5VfPQefYelZUd

PZCe; 6T tx t



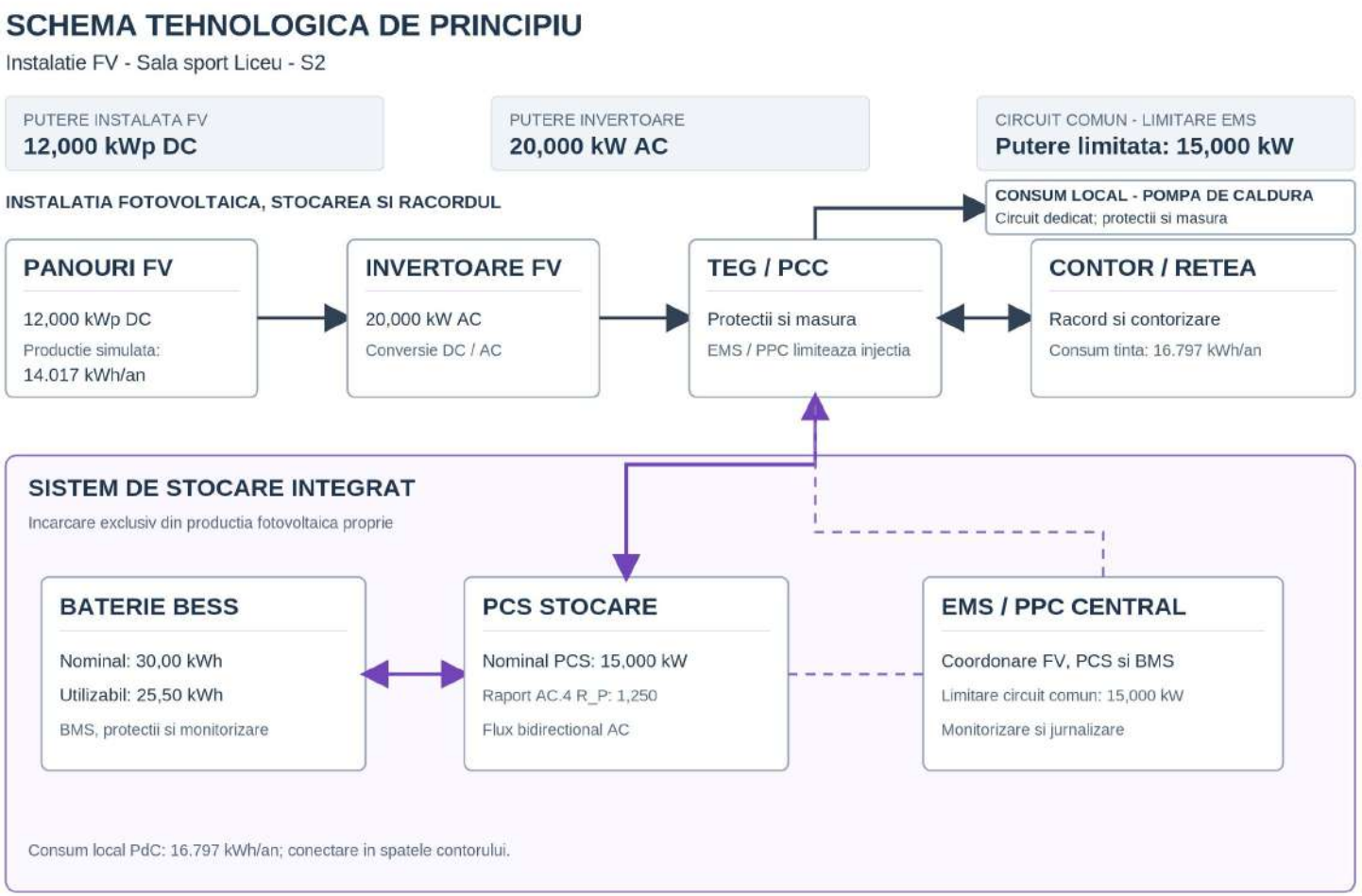
Px xFcQMYUMcQdUdeQZ PQac_PfOQcQdUde_OMcQMQ^QcSUQUQYQOecUDQPU dfcdQcQSQ^QcMNUYQPQeUd_YMcaQ^ecf O_^dfZ ac_actf MrO_Zf^QUaQcUWZ5VfPQefYelZUd

PZDe; 6Yvz z z v bz t



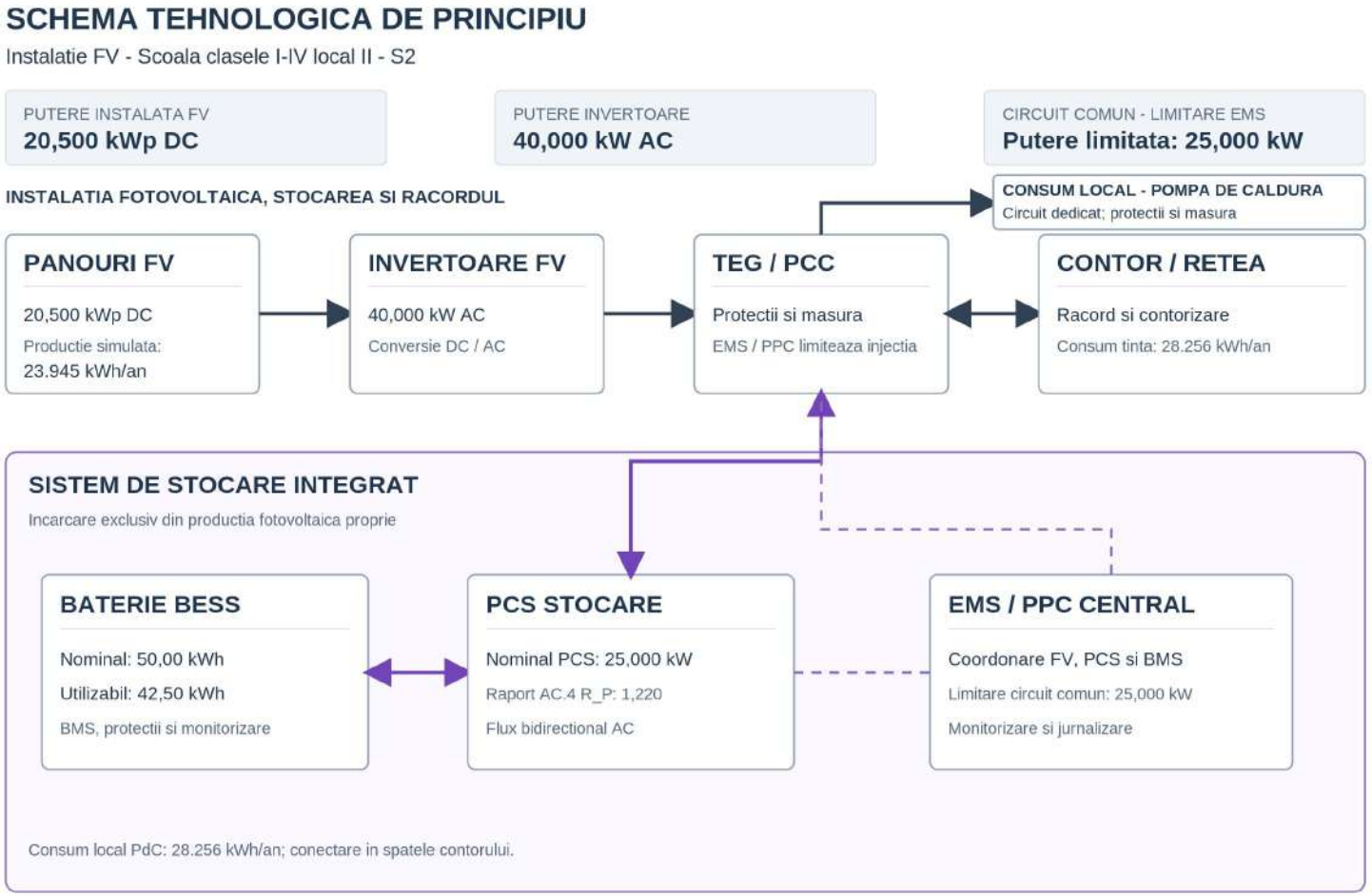
Px xFcQMYUMcQdUdeQZ PQac_PfOQcQdUde_OMcQMQ^QcSUQUQYQOecUDQPU dfcdQcQSQ^QcMNUYQPQeUd_YMcaQ^ecf O_^dfZ ac_actf MrO_Zf^QUaQcUWZ5VfPQefYelZUd

PŒe; 6et t Yvz

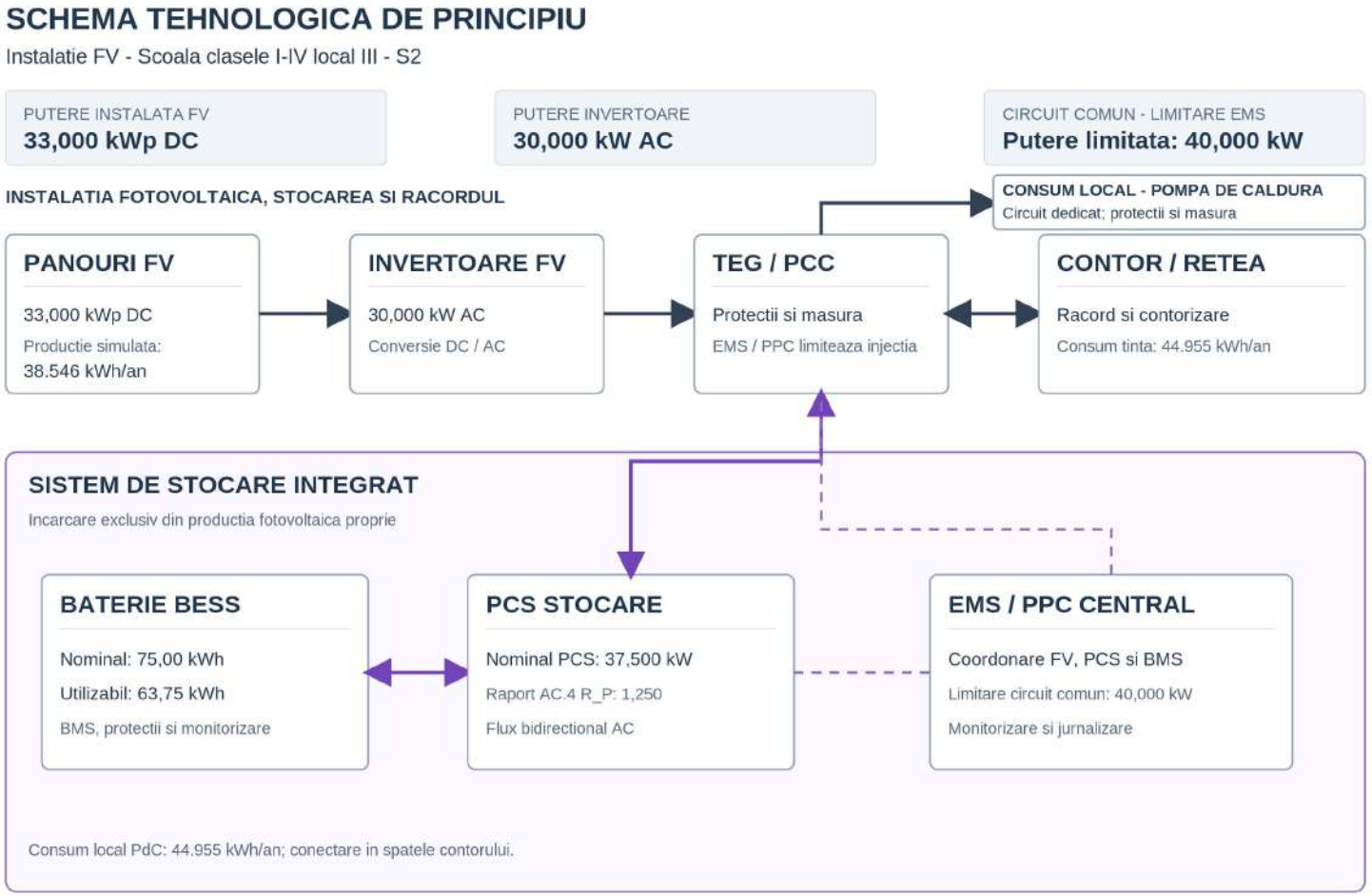


Px xFcQMYUMcQdUdeQZ PQac_PfOQcQdUde_OMcQMQ^QcSUQUQYQOecUDQPU dfcdQcQSQ^QcMNUYQPQeUd_YMcaQ^ecf O_^dfZ ac_actf MYO_Zf^QUaQcUWZ5VfPQefYelZUd

PTFe;6evttvtzzV6Wh vt W



P7.9 e; 6 ev t t v t zz V6Vh vt VW



Px xFcQMYUMcQdUdeQZ PQac_PfOQcQdUde_OMcQMQ^QcSUQUQYQOecUDQPU dfcdQcQSQ^QcMNUYQPQeld_YMcaQ^ecf O_^dfZ ac_actf MY O_Zf^QUaQcUWZ5VfPQefYelZUd

N_Rj N Q7ePURZ R fRU_aYaTVPR fRdZ VPR 6 e: eVe;

QZ e: 6 T tx t

SCHEMA TEHNOLOGICA DE PRINCIPIU - SURSA TERMICA

Pompa de caldura - [S1] Gradinita

Configuratie: 1 x 67.9 kW | Sistem Aer-apa

PUTERE TERMICA TOTALA	PUTERE ELECTRICA ESTIMATA*	SCOP - CLIMA MEDIE	DEBIT / RACORD
67,900 kW	18,998 kW	3,574	5,838 m3/h | DN50

RACORD HIDRAULIC - SURSA PdC

LIMITA DE INTERVENTIE

La primii robineti de separare, la limita instalatiei termice interioare existente

SISTEM POMPA DE CALDURA

Aer-apa - sursa termica

Unitati si module proprii sistemului PdC

Putere termica totala: 67,900 kW

Automatizare coordonata si protectii proprii

TUR 55 C | DN50 | 5,838 m3/h

R1 - Primul robinet de separare pe tur

Racorduri tur / retur PdC pana la primii robineti de separare ai instalatiei termice interioare existente.

RETUR 45 C | DN50

R2 - Primul robinet de separare pe retur

INSTALATIE TERMICA INTERIOARA EXISTENTA

Configuratie interioara nedetaliata.

Instalatia interioara se mentine si nu face obiectul interventiei reprezentate.

R1 / R2: limita racordului propus. Linia punctata delimiteaza instalatia existenta; sensul returului este spre PdC.

ALIMENTARE ELECTRICA

Circuit electric dedicat pentru sistemul PdC. Protectii, masura si separare conform datelor electrice ale echipamentelor.

AUTOMATIZARE

Comanda coordonata a componentelor PdC. Reglare, senzori si semnalizarea starilor de functionare.

LUCRARI PROPUSE

Sistem PdC si racorduri termice / electrice pana la limita marcata. Probe si punere in functiune.

Limita lucrarilor: racordarea sursei PdC la primii robineti de separare de pe tur si retur, la limita instalatiei termice interioare existente. Instalatia interioara se mentine si nu face obiectul interventiei.

* Putere electrica estimata din Pth / SCOP, nu putere electrica maxima de dimensionare. Schema de principiu, fara scara.

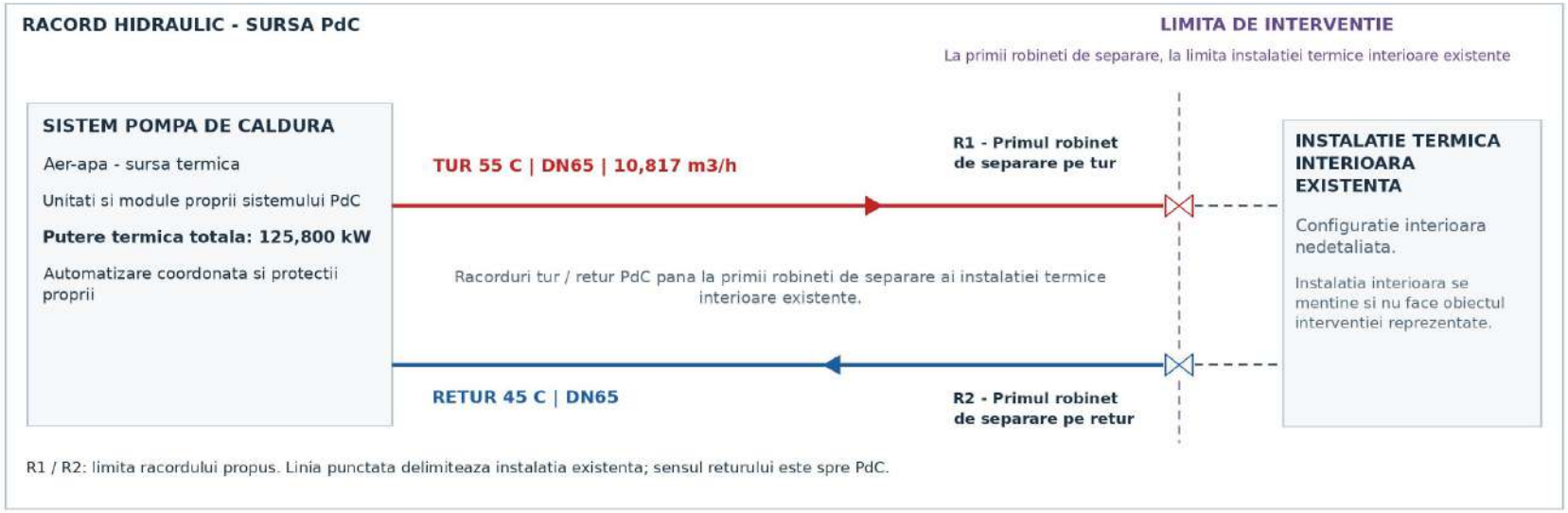
QZ; e: 6 Yvz z z v bz t

SCHEMA TEHNOLOGICA DE PRINCIPIU - SURSA TERMICA

Pompa de caldura - [S1] Liceu teoretic Periam

Configuratie: 1 x 125.8 kW | Sistem Aer-apa

PUTERE TERMICA TOTALA	PUTERE ELECTRICA ESTIMATA*	SCOP - CLIMA MEDIE	DEBIT / RACORD
125,800 kW	35,238 kW	3,570	10,817 m3/h | DN65



ALIMENTARE ELECTRICA	AUTOMATIZARE	LUCRARI PROPUSE
Circuit electric dedicat pentru sistemul PdC. Protectii, masura si separare conform datelor electrice ale echipamentelor.	Comanda coordonata a componentelor PdC. Reglare, senzori si semnalizarea starilor de functionare.	Sistem PdC si racorduri termice / electrice pana la limita marcata. Probe si punere in functiune.

Limita lucrarilor: racordarea sursei PdC la primii robineti de separare de pe tur si retur, la limita instalatiei termice interioare existente. Instalatia interioara se mentine si nu face obiectul interventiei.

* Putere electrica estimata din Pth / SCOP, nu putere electrica maxima de dimensionare. Schema de principiu, fara scara.

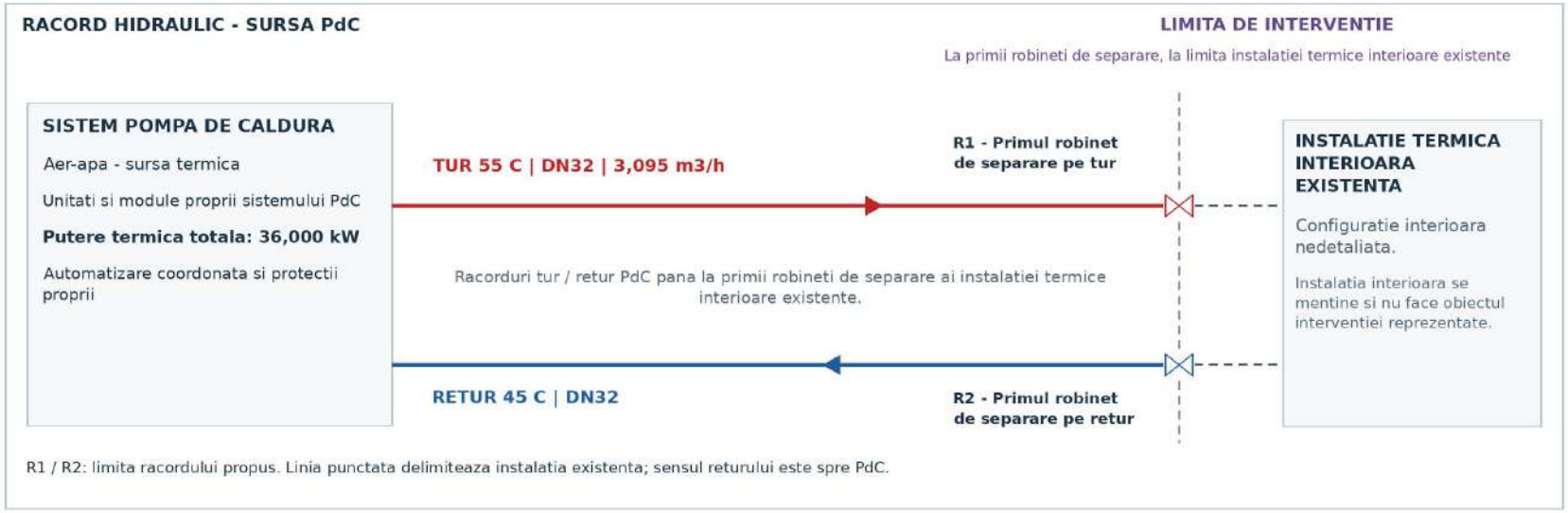
QZ= e: 6 et t Yvz

SCHEMA TEHNOLOGICA DE PRINCIPIU - SURSA TERMICA

Pompa de caldura - [S1] Sala sport Liceu

Configuratie: 1 x 36 kW | Sistem Aer-apa

PUTERE TERMICA TOTALA	PUTERE ELECTRICA ESTIMATA*	SCOP - CLIMA MEDIE	DEBIT / RACORD
36,000 kW	9,896 kW	3,638	3,095 m3/h | DN32



ALIMENTARE ELECTRICA	AUTOMATIZARE	LUCRARI PROPUSE
Circuit electric dedicat pentru sistemul PdC. Protectii, masura si separare conform datelor electrice ale echipamentelor.	Comanda coordonata a componentelor PdC. Reglare, senzori si semnalizarea starilor de functionare.	Sistem PdC si racorduri termice / electrice pana la limita marcata. Probe si punere in functiune.

Limita lucrarilor: racordarea sursei PdC la primii robineti de separare de pe tur si retur, la limita instalatiei termice interioare existente. Instalatia interioara se mentine si nu face obiectul interventiei.

* Putere electrica estimata din Pth / SCOP, nu putere electrica maxima de dimensionare. Schema de principiu, fara scara.

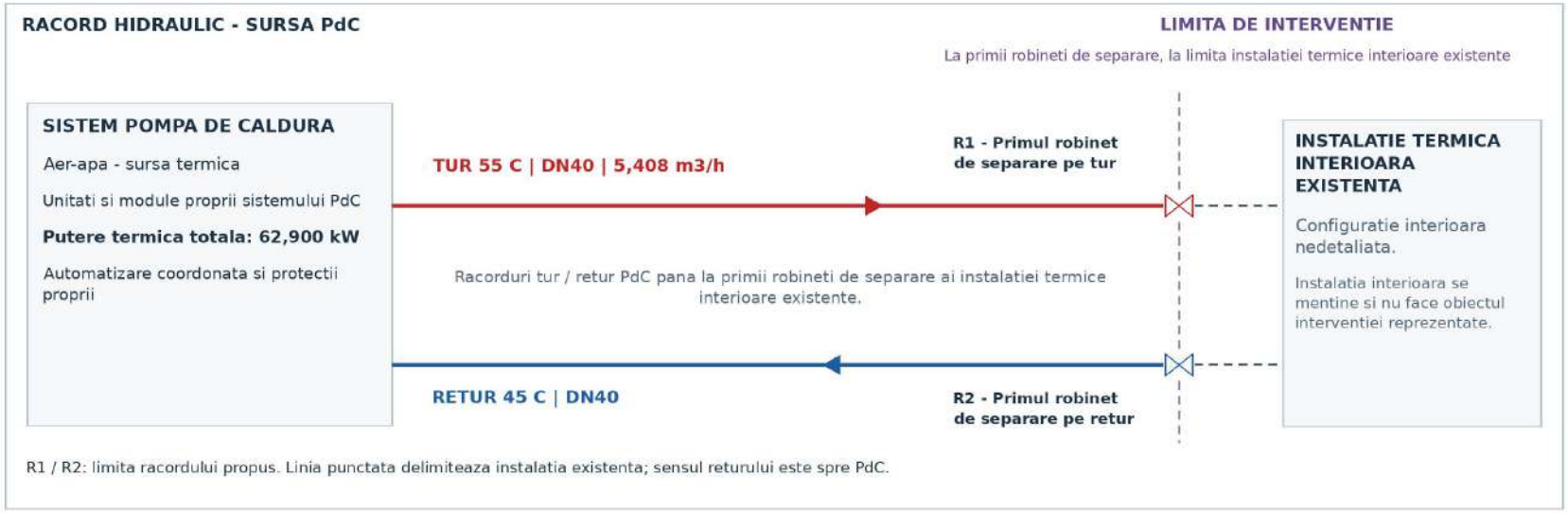
QZAe: 6 ev t t v t zz V6Vh vt W

SCHEMA TEHNOLOGICA DE PRINCIPIU - SURSA TERMICA

Pompa de caldura - [S1] Scoala clasele I-IV local II

Configuratie: 1 x 62.9 kW | Sistem Aer-apa

PUTERE TERMICA TOTALA	PUTERE ELECTRICA ESTIMATA*	SCOP - CLIMA MEDIE	DEBIT / RACORD
62,900 kW	17,619 kW	3,570	5,408 m3/h | DN40



ALIMENTARE ELECTRICA	AUTOMATIZARE	LUCRARI PROPUSE
Circuit electric dedicat pentru sistemul PdC. Protectii, masura si separare conform datelor electrice ale echipamentelor.	Comanda coordonata a componentelor PdC. Reglare, senzori si semnalizarea starilor de functionare.	Sistem PdC si racorduri termice / electrice pana la limita marcata. Probe si punere in functiune.

Limita lucrarilor: racordarea sursei PdC la primii robineti de separare de pe tur si retur, la limita instalatiei termice interioare existente. Instalatia interioara se mentine si nu face obiectul interventiei.

* Putere electrica estimata din Pth / SCOP, nu putere electrica maxima de dimensionare. Schema de principiu, fara scara.

Px xFcQMYlkMcQdUdeQZ PQac_PfOQcQdUde_OMcQMQ^QcSlQUQYQOeclQQPU dfcdQcQSQ^QcMNlYQPQeld_YMc aQ^ecf O_^dfZ ac_actf MrO_Zf^QUaQclWZ5VfPQefYelZld

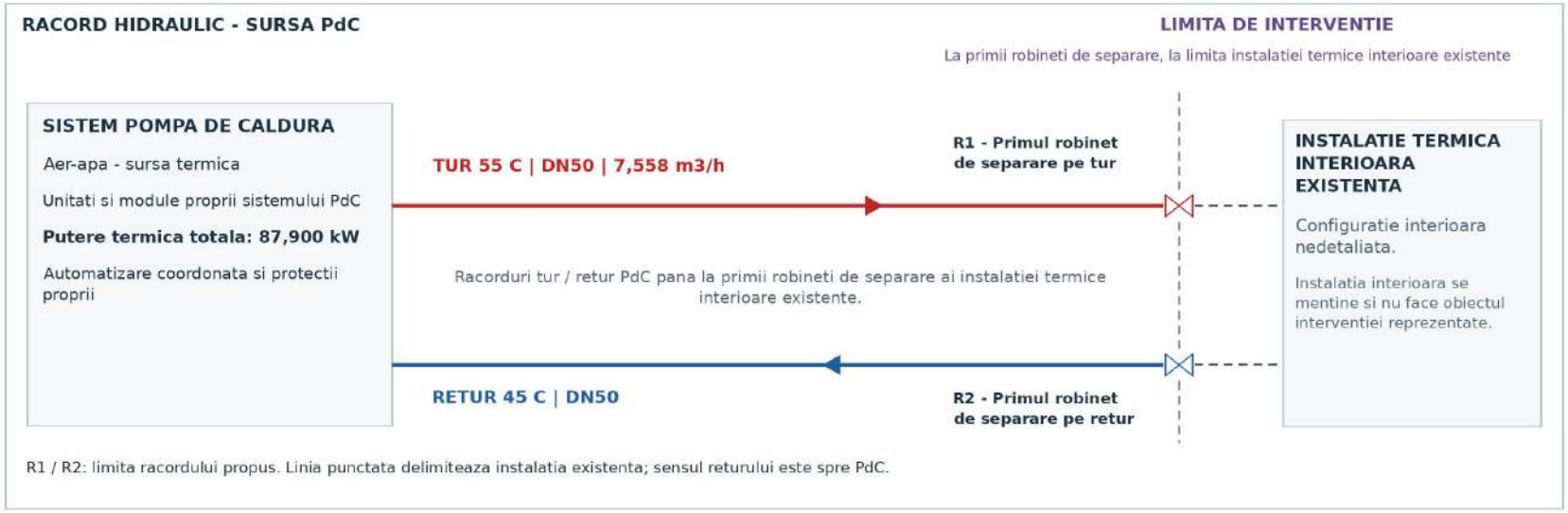
QZBe: 6evttvtzzV6Vh vt VW

SCHEMA TEHNOLOGICA DE PRINCIPIU - SURSA TERMICA

Pompa de caldura - [S1] Scoala clasele I-IV local III

Configuratie: 1 x 87.9 kW | Sistem Aer-apa

PUTERE TERMICA TOTALA	PUTERE ELECTRICA ESTIMATA*	SCOP - CLIMA MEDIE	DEBIT / RACORD
87,900 kW	24,622 kW	3,570	7,558 m3/h | DN50



ALIMENTARE ELECTRICA	AUTOMATIZARE	LUCRARI PROPUSE
Circuit electric dedicat pentru sistemul PdC. Protectii, masura si separare conform datelor electrice ale echipamentelor.	Comanda coordonata a componentelor PdC. Reglare, senzori si semnalizarea starilor de functionare.	Sistem PdC si racorduri termice / electrice pana la limita marcata. Probe si punere in functiune.

Limita lucrarilor: racordarea sursei PdC la primii robineti de separare de pe tur si retur, la limita instalatiei termice interioare existente. Instalatia interioara se mentine si nu face obiectul interventiei.

* Putere electrica estimata din Pth / SCOP, nu putere electrica maxima de dimensionare. Schema de principiu, fara scara.

Px xFcQMYlkMcQdUdeQZ PQac_PfOQcQdUde_OMcQMQ^QcSlQUQYQOeclQQPU dfcdQcQSQ^QcMNlYQPQelal d_YMc aQ^ecf O_^dfZ ac_actf MrO_Zf^QUaQclWZ5VfPQefYelZld

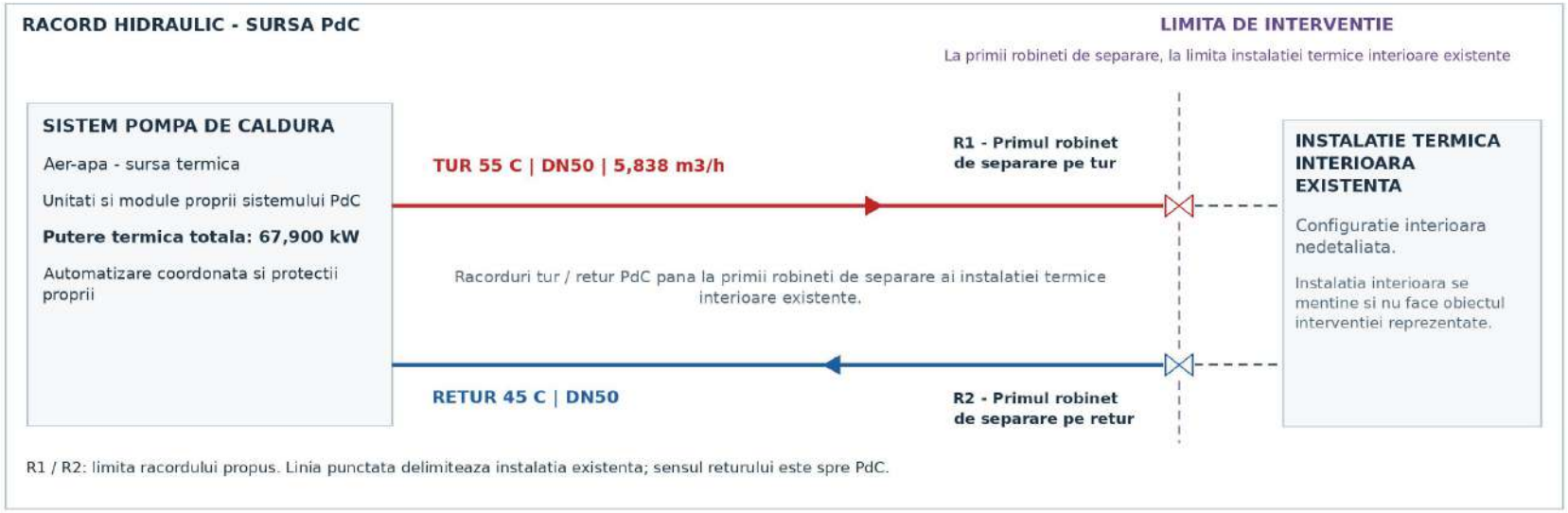
QZCe; 6Ttx t

SCHEMA TEHNOLOGICA DE PRINCIPIU - SURSA TERMICA

Pompa de caldura - [S2] Gradinita

Configuratie: 1 x 67.9 kW | Sistem Aer-apa

PUTERE TERMICA TOTALA	PUTERE ELECTRICA ESTIMATA*	SCOP - CLIMA MEDIE	DEBIT / RACORD
67,900 kW	19,400 kW	3,500	5,838 m3/h | DN50



ALIMENTARE ELECTRICA	AUTOMATIZARE	LUCRARI PROPUSE
Circuit electric dedicat pentru sistemul PdC. Protectii, masura si separare conform datelor electrice ale echipamentelor.	Comanda coordonata a componentelor PdC. Reglare, senzori si semnalizarea starilor de functionare.	Sistem PdC si racorduri termice / electrice pana la limita marcata. Probe si punere in functiune.

Limita lucrarilor: racordarea sursei PdC la primii robineti de separare de pe tur si retur, la limita instalatiei termice interioare existente. Instalatia interioara se mentine si nu face obiectul interventiei.

* Putere electrica estimata din Pth / SCOP, nu putere electrica maxima de dimensionare. Schema de principiu, fara scara.

Px xFcQMYlkMcQdUdeQZ PQac_PfOQcQdUde_OMcQMQ^QcSlQUQYQOeclQDQPU dfcdQcQSQ^QcMNUYQPQeld_YMc aQ^ecf O_^dfZ ac_actf MrO_Zf^QUaQclWZ5VfPQefYelZld

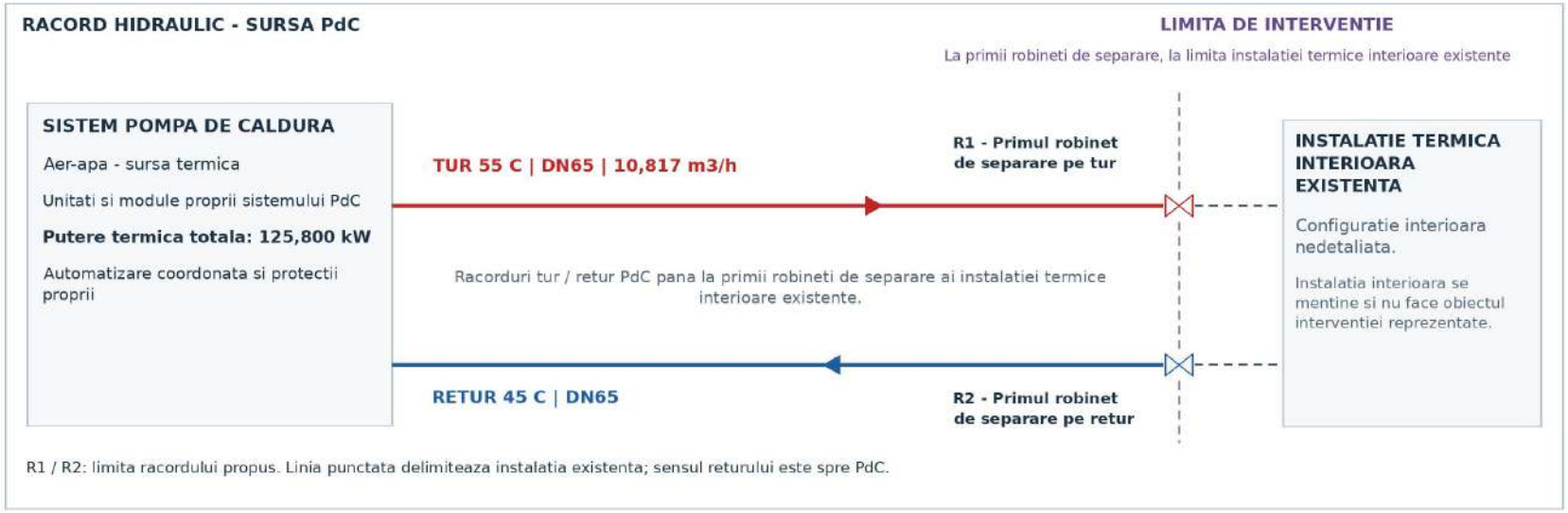
QZDe; 6Yvz z z vbz t

SCHEMA TEHNOLOGICA DE PRINCIPIU - SURSA TERMICA

Pompa de caldura - [S2] Liceu teoretic Periam

Configuratie: 1 x 125.8 kW | Sistem Aer-apa

PUTERE TERMICA TOTALA	PUTERE ELECTRICA ESTIMATA*	SCOP - CLIMA MEDIE	DEBIT / RACORD
125,800 kW	35,943 kW	3,500	10,817 m3/h | DN65



ALIMENTARE ELECTRICA	AUTOMATIZARE	LUCRARI PROPUSE
Circuit electric dedicat pentru sistemul PdC. Protectii, masura si separare conform datelor electrice ale echipamentelor.	Comanda coordonata a componentelor PdC. Reglare, senzori si semnalizarea starilor de functionare.	Sistem PdC si racorduri termice / electrice pana la limita marcata. Probe si punere in functiune.

Limita lucrarilor: racordarea sursei PdC la primii robineti de separare de pe tur si retur, la limita instalatiei termice interioare existente. Instalatia interioara se mentine si nu face obiectul interventiei.

* Putere electrica estimata din Pth / SCOP, nu putere electrica maxima de dimensionare. Schema de principiu, fara scara.

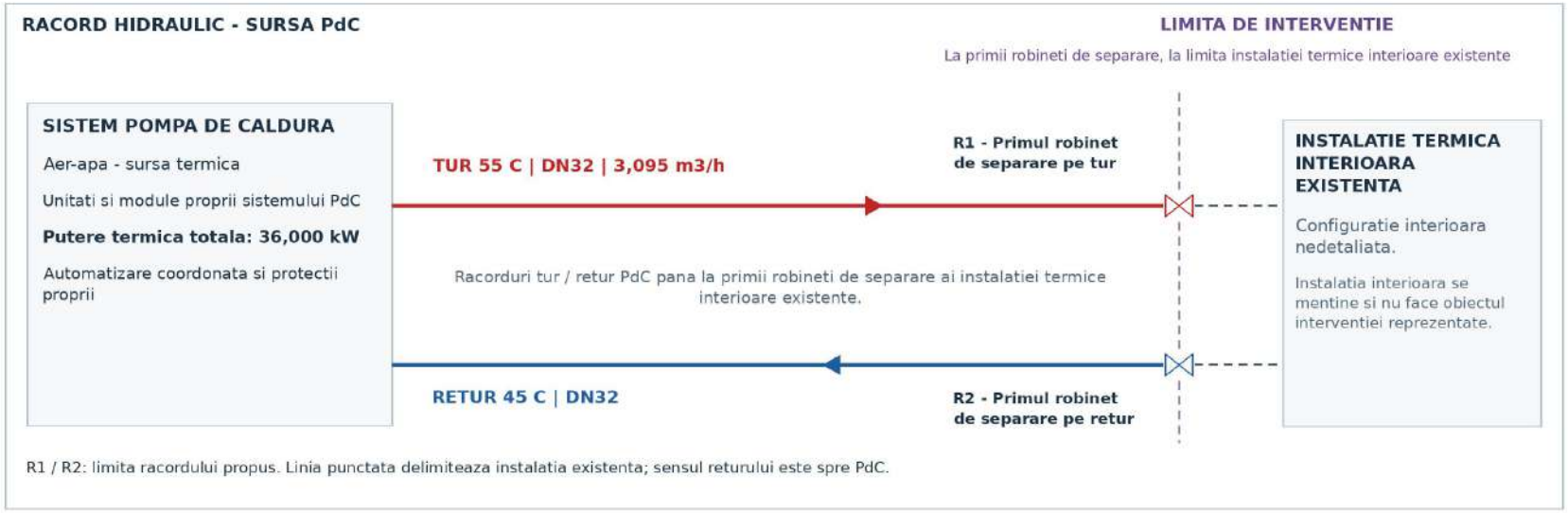
QZE e; 6 et t Yvz

SCHEMA TEHNOLOGICA DE PRINCIPIU - SURSA TERMICA

Pompa de caldura - [S2] Sala sport Liceu

Configuratie: 1 x 36 kW | Sistem Aer-apa

PUTERE TERMICA TOTALA	PUTERE ELECTRICA ESTIMATA*	SCOP - CLIMA MEDIE	DEBIT / RACORD
36,000 kW	10,286 kW	3,500	3,095 m3/h | DN32



ALIMENTARE ELECTRICA	AUTOMATIZARE	LUCRARI PROPUSE
Circuit electric dedicat pentru sistemul PdC. Protectii, masura si separare conform datelor electrice ale echipamentelor.	Comanda coordonata a componentelor PdC. Reglare, senzori si semnalizarea starilor de functionare.	Sistem PdC si racorduri termice / electrice pana la limita marcata. Probe si punere in functiune.

Limita lucrarilor: racordarea sursei PdC la primii robineti de separare de pe tur si retur, la limita instalatiei termice interioare existente. Instalatia interioara se mentine si nu face obiectul interventiei.

* Putere electrica estimata din Pth / SCOP, nu putere electrica maxima de dimensionare. Schema de principiu, fara scara.

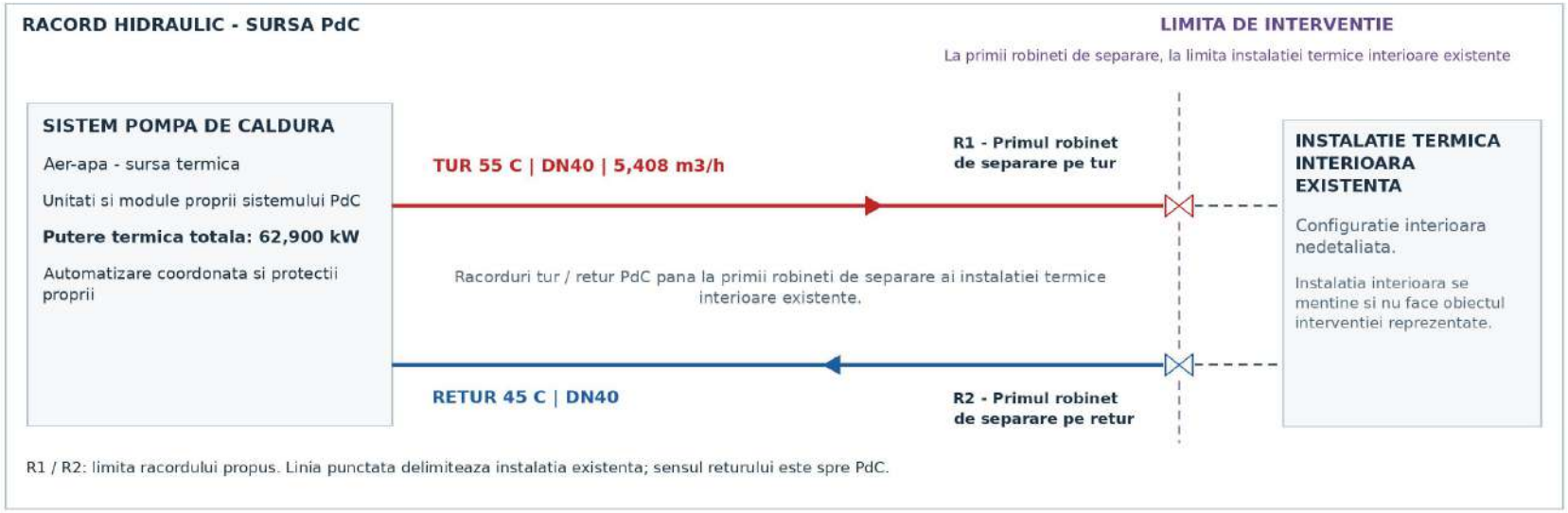
QZFe; 6evttvtzzV6Vh vt W

SCHEMA TEHNOLOGICA DE PRINCIPIU - SURSA TERMICA

Pompa de caldura - [S2] Scoala clasele I-IV local II

Configuratie: 1 x 62.9 kW | Sistem Aer-apa

PUTERE TERMICA TOTALA	PUTERE ELECTRICA ESTIMATA*	SCOP - CLIMA MEDIE	DEBIT / RACORD
62,900 kW	17,971 kW	3,500	5,408 m3/h | DN40



ALIMENTARE ELECTRICA	AUTOMATIZARE	LUCRARI PROPUSE
Circuit electric dedicat pentru sistemul PdC. Protectii, masura si separare conform datelor electrice ale echipamentelor.	Comanda coordonata a componentelor PdC. Reglare, senzori si semnalizarea starilor de functionare.	Sistem PdC si racorduri termice / electrice pana la limita marcata. Probe si punere in functiune.

Limita lucrarilor: racordarea sursei PdC la primii robineti de separare de pe tur si retur, la limita instalatiei termice interioare existente. Instalatia interioara se mentine si nu face obiectul interventiei.

* Putere electrica estimata din Pth / SCOP, nu putere electrica maxima de dimensionare. Schema de principiu, fara scara.

QZ9e; 6evttvtzzV6Vh vt VW

SCHEMA TEHNOLOGICA DE PRINCIPIU - SURSA TERMICA

Pompa de caldura - [S2] Scoala clasele I-IV local III

Configuratie: 1 x 87.9 kW | Sistem Aer-apa

PUTERE TERMICA TOTALA	PUTERE ELECTRICA ESTIMATA*	SCOP - CLIMA MEDIE	DEBIT / RACORD
87,900 kW	25,114 kW	3,500	7,558 m3/h | DN50



ALIMENTARE ELECTRICA

Circuit electric dedicat pentru sistemul PdC. Protectii, masura si separare conform datelor electrice ale echipamentelor.

AUTOMATIZARE

Comanda coordonata a componentelor PdC. Reglare, senzori si semnalizarea starilor de functionare.

LUCRARI PROPUSE

Sistem PdC si racorduri termice / electrice pana la limita marcata. Probe si punere in functiune.

Limita lucrarilor: racordarea sursei PdC la primii robineti de separare de pe tur si retur, la limita instalatiei termice interioare existente. Instalatia interioara se mentine si nu face obiectul interventiei.

* Putere electrica estimata din Pth / SCOP, nu putere electrica maxima de dimensionare. Schema de principiu, fara scara.

V v 5 7Uz R]rZ

SOCIETATEA COMERCIALA CIF: RO36289927 OGAUS TECHNOLOGY S.R.L. J2/890/2016 ARAD - ROMÂNIA