ꯄ꯭ꯂꯥꯁꯇꯤꯛ ꯍꯥꯏꯕꯁꯤ ꯅꯨꯡꯇꯤꯒꯤ ꯄꯨꯟꯁꯤꯗ ꯑꯗꯨꯛꯀꯤ
ꯃꯇꯤꯛ ꯀꯥꯟꯅꯈ꯭ꯔꯕ ꯄꯣꯠꯁꯛ ꯑꯣꯏꯔꯒꯁꯨ, ꯃꯍꯧꯁꯥꯒꯤ
ꯊꯧꯑꯣꯡꯅ ꯇꯨꯝꯍꯟꯕ ꯉꯝꯗꯕ ꯑꯣꯏꯔꯒꯗꯤ, ꯑꯀꯣꯏꯕꯒꯤ
ꯐꯤꯚꯝꯗ ꯑꯀꯥꯏꯕ ꯀꯌꯥꯃꯨꯛ ꯊꯣꯛꯍꯟꯕꯅ ꯃꯁꯤꯒꯤ ꯃꯇꯥꯡꯗ
ꯅꯨꯡꯅꯥꯡꯕ ꯄꯣꯛꯄꯒꯤ ꯆꯥꯡ ꯅꯣꯡꯃ ꯅꯣꯡꯃꯒꯤ ꯍꯦꯟꯒꯠꯂꯛꯏ꯫

ꯑꯗꯨꯅ ꯃꯍꯧꯁꯥꯒꯤ ꯊꯧꯑꯣꯡꯅ ꯇꯨꯝꯍꯟꯕ ꯉꯝꯕ ꯕꯥꯏꯑꯣꯄꯣꯂꯤꯃꯔ,
ꯕꯥꯁꯑꯣꯄ꯭ꯂꯥꯁꯇꯤꯛ ꯅꯠꯇ꯭ꯔꯒ ꯈꯨꯠꯁꯦꯝꯒꯤ ꯕꯥꯏꯑꯣꯗꯤꯒ꯭ꯔꯦꯗꯦꯕꯜ
ꯑꯣꯏꯕ ꯄꯣꯂꯤꯃꯔꯁꯤꯡ ꯁꯥꯕꯒꯤ ꯇꯉꯥꯏꯐꯗꯕ ꯂꯥꯛꯄꯅ ꯂꯝꯁꯤꯗ
ꯊꯤꯖꯤꯟꯕꯒꯤ ꯊꯕꯛ ꯀꯌꯥ ꯄꯥꯏꯈꯠꯅꯔꯛꯄꯅ ꯃꯍꯧꯁꯥꯅ ꯇꯨꯝꯕ
ꯉꯝꯕ ꯄ꯭ꯂꯥꯁꯇꯤꯛ ꯀꯌꯥ ꯄꯨꯊꯣꯔꯛꯈ꯭ꯔꯦ꯫ ꯈꯨꯗꯝ ꯈꯔ ꯄꯜꯂꯕꯗ
ꯄꯣꯂꯤꯂꯦꯁꯇꯤꯛ ꯑꯦꯁꯤꯗ (ꯄꯤ ꯑꯦꯜ ꯑꯦ), ꯄꯣꯂꯤꯕ꯭ꯌ
ꯨꯇꯥꯏꯂꯤꯟ ꯁꯥꯔꯀꯤꯅꯦꯠ (ꯄꯤ ꯕꯤ ꯑꯦꯁ), ꯄꯣꯂꯤꯚꯤꯅꯥꯏꯜ
ꯑꯜꯀꯣꯍꯣꯜ, ꯄꯣꯂꯤꯑꯦꯟꯍꯥꯏꯗ꯭ꯔꯥꯏꯅꯆꯤꯡꯕ ꯂꯩꯔꯤ꯫ ꯑꯗꯨꯕꯨ
ꯄ꯭ꯂꯥꯁꯇꯤꯛꯁꯤꯡꯁꯤꯒꯤ ꯃꯇꯥꯡꯗ ꯍꯧꯖꯤꯛ ꯌꯦꯠꯅꯅꯤꯡꯉꯥꯏ ꯑꯣꯏꯕ
ꯋꯥꯐꯝ ꯀꯌꯥꯃꯨꯛ ꯂꯩꯇꯕꯗꯤ ꯅꯠꯇꯦ꯫ ꯃꯈꯣꯏꯕꯨ ꯃꯍꯧꯁꯥꯅ ꯇꯨꯝꯍꯟꯕ
ꯉꯝꯂꯕꯁꯨ ꯑꯃꯥꯡ ꯑꯇꯣꯡ ꯌꯦꯡꯅꯕꯗ ꯑꯃꯥꯡꯕꯒꯤ ꯆꯥꯡꯁꯤ ꯋꯥꯡꯂꯤ꯫

ꯈꯨꯗꯝ ꯑꯣꯏꯅ, ꯄꯣꯂꯤꯂꯦꯛꯇꯤꯛ ꯑꯦꯁꯤꯗꯁꯤ ꯀꯤꯂꯣꯒ꯭ꯔꯥꯝ ꯑꯃ
ꯄꯨꯊꯣꯛꯄꯗ ꯆꯨꯖꯥꯛ ꯀꯤꯂꯣꯒ꯭ꯔꯥꯝ 2.65 ꯆꯪꯏ꯫ ꯑꯗꯨꯅ ꯃꯥꯂꯦꯝꯒꯤ
ꯑꯣꯏꯅ ꯆꯍꯤ ꯑꯃꯗ ꯄꯨꯊꯣꯛꯂꯤꯕ ꯄ꯭ꯂꯥꯁꯇꯤꯛ ꯃꯤꯂꯤꯌꯟ ꯇꯟ
270 ꯁꯤꯒꯤ ꯃꯍꯨꯠ ꯆꯨꯖꯥꯛꯇꯒꯤ ꯐꯪꯕ ꯄꯣꯂꯤꯂꯦꯛꯇꯤꯛ ꯑꯦꯁꯤꯗꯅ
ꯁꯤꯟꯗꯣꯛꯍꯟꯕ ꯍꯣꯠꯅꯕꯗ ꯆꯨꯖꯥꯛ ꯃꯤꯂꯤꯌꯟ ꯇꯟ 715.5 ꯃꯨꯛ
ꯆꯪꯒꯅꯤ꯫ ꯃꯁꯤꯅ ꯐꯨꯗ ꯁꯦꯀꯨꯔꯤꯇꯤ ꯑꯆꯧꯕ ꯆꯩꯊꯦꯡ ꯄꯤꯒꯅꯤ꯫

ꯃꯁꯤꯒꯤꯁꯨ ꯃꯊꯛꯇ ꯑꯁꯤꯒꯨꯝꯕ ꯄ꯭ꯂꯥꯁꯇꯤꯛꯁꯤꯡꯁꯤ ꯁꯨꯡꯅꯕ
ꯍꯣꯠꯅꯕꯗ ꯐꯣꯁꯤꯜ ꯐꯨꯑꯦꯜ ꯌꯥꯝꯅ ꯆꯪꯂꯤ꯫

ꯃꯔꯝ ꯑꯁꯤꯅ ꯍꯦꯟꯅ ꯐꯒꯠꯂꯕ ꯄ꯭ꯂꯥꯁꯇꯤꯛ
ꯅꯠꯇ꯭ꯔꯒ ꯄꯣꯂꯤꯃꯔ ꯄꯨꯊꯣꯛꯄꯒꯤ ꯃꯊꯧ ꯇꯥꯔꯛꯏ꯫

ꯄꯣꯂꯤꯍꯥꯏꯗ꯭ꯔꯣꯛꯁꯤꯑꯜꯀꯥꯅꯣꯏꯗ ꯑꯦꯁꯤꯗ (PHAs) ꯍꯥꯏꯕꯁꯤ
ꯃꯍꯧꯁꯥꯗ ꯇꯨꯝꯕ ꯉꯝꯕ ꯁꯁꯇꯦꯅꯦꯕꯜ ꯑꯣꯏꯕ ꯑꯃꯁꯨꯡ ꯃꯍꯧꯁꯥꯒꯤ
ꯃꯔꯨꯞ ꯑꯣꯏꯕ ꯄ꯭ꯂꯥꯁꯇꯤꯛ ꯑꯃꯅꯤ꯫ ꯄ꯭ꯂꯥꯁꯇꯤꯛꯁꯤ ꯕꯦꯛꯇꯔꯤꯌꯥ
ꯑꯌꯥꯝꯕꯅ ꯁꯨꯡꯕ ꯉꯝꯃꯤ ꯑꯗꯨꯒ ꯃꯁꯤ ꯁꯨꯡꯕꯗ ꯌꯥꯝꯅ ꯃꯔꯨꯑꯣꯏꯔꯕ
ꯑꯦꯟꯖꯥꯏꯝ ꯑꯃ ꯌꯥꯎꯗꯕ ꯌꯥꯗꯦ꯫ ꯑꯦꯟꯖꯥꯏꯝꯁꯤꯒꯤ ꯃꯃꯤꯡ
ꯄꯣꯂꯤꯍꯥꯏꯗ꯭ꯔꯣꯛꯁꯤꯑꯜꯀꯥꯅꯣꯠ ꯁꯤꯟꯊꯦꯖ (PHaC) ꯍꯥꯏꯅ
ꯈꯪꯅꯩ꯫ ꯑꯦꯟꯖꯥꯏꯝꯁꯤꯅ ꯑꯀꯟꯕ ꯑꯃꯁꯨꯡ ꯑꯊꯣꯠꯄ ꯃꯈꯜꯒꯤ
ꯄ꯭ꯂꯥꯁꯇꯤꯛꯁꯤꯡ ꯁꯨꯡꯕ ꯉꯝꯃꯤ꯫ ꯁꯨꯡꯒꯗꯧꯔꯤꯕ ꯄ꯭ꯂꯥꯁꯇꯤꯛ
ꯃꯈꯜꯁꯤ ꯕꯦꯛꯇꯔꯤꯌꯥꯗꯨꯅ ꯐꯪꯂꯤꯕ ꯃꯦꯇꯔꯤꯑꯦꯜꯁꯤꯡꯒꯤ
ꯃꯈꯥ ꯄꯣꯜꯂꯤ꯫ ꯑꯗꯨꯅ ꯑꯦꯟꯖꯥꯏꯝꯁꯤꯒꯤ ꯁ꯭ꯇ꯭ꯔꯛꯆꯔ ꯈꯪꯕ
ꯍꯥꯏꯕꯁꯤ ꯌꯥꯝꯅ ꯃꯔꯨꯑꯣꯏꯔꯛꯏ꯫ ꯃꯁꯤꯒꯤ ꯁ꯭ꯇ꯭ꯔꯛꯆꯔ
ꯈꯪꯂꯕ ꯇꯨꯡꯗꯗꯤ ꯑꯦꯟꯖꯤꯅꯤꯌꯔꯁꯤꯡꯅ ꯈꯨꯠꯁꯦꯝꯒꯤ ꯄꯥꯝꯕꯩ ꯈꯔ
ꯁꯤꯖꯤꯟꯅꯔꯒ ꯑꯦꯟꯖꯥꯏꯝꯗꯨꯕꯨ ꯑꯄꯥꯝꯕ ꯃꯈꯜꯒꯤ ꯄ꯭ꯂꯥꯁꯇꯤꯛ
ꯁꯨꯡꯕꯗ ꯁꯤꯖꯤꯟꯅꯕ ꯌꯥꯒꯅꯤ ꯍꯥꯏꯔꯤ꯫ ꯃꯁꯤꯅ ꯃꯍꯧꯁꯥꯗ ꯇꯨꯝꯕ
ꯄ꯭ꯂꯥꯁꯇꯤꯛꯁꯤꯡ ꯁꯥꯕꯗ ꯑꯆꯧꯕ ꯃꯇꯦꯡ ꯄꯥꯡꯒꯅꯤ ꯍꯥꯏꯅ ꯍꯧꯈꯤꯕ
ꯆꯍꯤꯒꯤ ꯅꯕꯦꯝꯕꯔ 25ꯒꯤ ‘ꯖꯔꯅꯦꯜ ꯑꯣꯐ ꯕꯥꯁꯑꯣꯂꯣꯖꯤꯀꯦꯜ
ꯀꯦꯃꯤꯁꯇ꯭ꯔꯤ’ ꯗ ꯐꯣꯡꯗꯣꯛꯈ꯭ꯔꯦ꯫

qldfjg\kKgie PHaC KgcgEerbe PHAs okTe

ꯄꯣꯂꯤꯃꯔꯁꯤ ꯁꯨꯡꯕꯒꯤ ꯊꯕꯛꯁꯤ, ꯀꯥꯔꯕꯣꯟꯗꯤ ꯃꯔꯥꯡ ꯀꯥꯏꯅ
ꯂꯩꯕ ꯑꯗꯨꯕꯨ ꯑꯇꯩ ꯅ꯭ꯌꯨꯇ꯭ꯔꯤꯑꯦꯟꯁꯤꯡ ꯍꯥꯏꯕꯗꯤ ꯃꯆꯤꯟꯖꯥꯛ

mpjdfDjq afAr wkiFOdT! Cupriavidus necator

ꯍꯥꯏꯔꯤꯕ ꯕꯦꯛꯇꯔꯤꯌꯥꯁꯤꯡꯅ ꯃꯁꯥꯒꯤ ꯑꯔꯨꯝꯕꯒꯤ (ꯃꯍꯤꯒꯤ
ꯁꯔꯨꯛ ꯌꯥꯎꯗꯕ) 85% ꯗꯤ ꯄꯣꯂꯤꯃꯔꯁꯤ ꯑꯣꯏꯅ ꯇꯨꯡꯁꯤꯟꯗꯨꯅ
ꯊꯝꯕ ꯉꯝꯃꯤ꯫ ꯄꯣꯂꯤꯃꯔꯁꯤ ꯕꯥꯏꯑꯣꯇꯦꯛꯅꯣꯂꯍꯖꯤꯗ
ꯃꯔꯨꯑꯣꯏꯕ ꯑꯣꯏꯅ ꯂꯧꯅꯩ ꯃꯔꯝꯗꯤ ꯃꯁꯤꯗꯒꯤ ꯊꯔꯃꯣꯄ꯭ꯂꯥꯁꯇꯤꯛ
ꯑꯃꯗꯤ ꯏꯂꯥꯁꯇ꯭ꯔꯣꯃꯔꯅꯆꯤꯡꯕ ꯃꯈꯜ ꯀꯌꯥꯒꯤ ꯄꯣꯂꯤꯃꯔꯁꯤꯡ
ꯐꯪꯕ ꯌꯥꯏ꯫ ꯏꯂꯥꯁꯇ꯭ꯔꯣꯃꯔ ꯍꯥꯏꯕꯁꯤ ꯔꯕꯔꯒ ꯃꯥꯟꯅꯕ ꯃꯒꯨꯟ
ꯆꯦꯜꯂꯤ꯫ ꯕꯦꯛꯇꯔꯤꯌꯥꯗ ꯌꯥꯎꯔꯤꯕ ꯑꯦꯟꯖꯥꯏꯝꯁꯤꯅ ꯀꯔꯝꯕ
ꯃꯈꯜꯒꯤ ꯄꯣꯂꯤꯃꯔ ꯁꯨꯡꯒꯗꯒꯦ ꯍꯥꯏꯕꯁꯤ ꯃꯣꯅꯣꯃꯔ ꯑꯣꯏꯔꯤꯕ

‘ꯍꯥꯏꯗ꯭ꯔꯣꯛꯁꯤꯑꯜꯀꯥꯏꯜ- ꯀꯣꯑꯦꯟꯖꯥꯏꯝ ꯑꯦ’ ꯃꯣꯂꯤꯀꯨꯜꯒꯤ
ꯃꯈꯥ ꯄꯣꯜꯂꯤ꯫ ꯃꯣꯂꯤꯀꯨꯜꯁꯤꯗ ꯌꯥꯎꯔꯤꯕ ‘ꯑꯜꯀꯥꯏꯜ’ ꯁꯤꯒꯤ
ꯃꯈꯜ ꯈꯦꯟꯅꯕꯒꯤ ꯃꯇꯨꯡꯏꯟꯅ ꯄꯣꯂꯤꯃꯔꯒꯤ ꯃꯈꯜꯁꯨ ꯈꯦꯟꯅꯩ꯫

ꯑꯜꯀꯥꯏꯜꯁꯤ ꯃꯤꯊꯥꯏꯜ (CH3), ꯏꯊꯥꯏꯜ (C2H5) ... ꯅꯣꯅꯥꯏꯜ
(C9H19) ꯐꯥꯎꯕ ꯑꯣꯏꯕ ꯌꯥꯏ꯫ ꯌꯥꯝꯅ ꯆꯦꯛꯁꯤꯟꯅ ꯄꯥꯡꯊꯣꯛꯄ
ꯆꯥꯡꯌꯦꯡꯗ ꯄꯣꯂꯤꯍꯥꯏꯗ꯭ꯔꯣꯛꯁꯤꯑꯜꯀꯥꯅꯣꯠ ꯁꯤꯟꯊꯦꯖꯅ ꯃꯣꯅꯣꯃꯔ
30,000 ꯒꯤ ꯂꯪꯂꯥ ꯁꯦꯝꯕ ꯉꯝꯃꯤ꯫ ꯑꯗꯨꯅ ꯃꯤꯑꯣꯏꯕꯅ ꯁꯦꯝꯕ
ꯈ꯭ꯋꯥꯏꯗꯒꯤ ꯆꯥꯎꯕ ꯃꯈꯜꯒꯤ ꯄ꯭ꯂꯥꯁꯇꯤꯛꯁꯤꯡ ꯁꯦꯝꯕ ꯉꯝꯂꯒꯅꯤ
ꯍꯥꯏꯕꯒꯤ ꯊꯥꯖꯕ ꯊꯤꯖꯤꯜꯂꯣꯏꯁꯤꯡꯅ ꯊꯝꯂꯤ꯫ ꯑꯗꯨꯒ ꯃꯈꯣꯏꯒꯤ
ꯃꯣꯂꯤꯀꯨꯂꯔ ꯃꯥꯁꯁꯤ ꯌꯨꯅꯤꯐꯣꯝ ꯑꯣꯏꯕꯅ ꯇꯣꯞ ꯇꯣꯞꯄ ꯃꯒꯨꯟ
ꯆꯦꯟꯕ ꯑꯈꯟꯅꯕ ꯄ꯭ꯂꯥꯁꯇꯤꯛꯁꯤꯡ ꯁꯨꯡꯕ ꯌꯥꯒꯅꯤ꯫

ꯕꯦꯛꯇꯔꯤꯌꯥꯁꯤꯡꯅ ꯄ꯭ꯂꯥꯁꯇꯤꯛ ꯃꯈꯜꯁꯤ ꯁꯨꯡꯕꯒꯛꯤ
ꯃꯇꯥꯡꯗ ꯍꯥꯟꯅꯗꯒꯤ ꯈꯪꯅꯔꯛꯂꯦ꯫ ꯑꯗꯨꯕꯨ PhaC ꯒꯤ
ꯁ꯭ꯇ꯭ꯔꯛꯆꯔꯁꯤ ꯈꯪꯗꯕꯅ ꯃꯁꯤꯒꯤ ꯂꯝꯗ ꯈꯨꯃꯥꯡ ꯏꯆꯥꯎ
ꯆꯥꯎꯁꯤꯟꯕ ꯉꯝꯗꯅ ꯂꯥꯛꯈꯤ꯫ ꯉꯁꯤꯗꯤ ꯍꯣꯋꯥꯔꯗ ꯍ꯭ꯌ
ꯨꯒꯁ ꯃꯦꯗꯤꯀꯦꯜ ꯏꯟꯁꯇꯤꯇ꯭ꯌꯨꯠꯀꯤ ꯗꯤꯄꯥꯔꯠꯃꯦꯟꯠ ꯑꯣꯐ
ꯕꯥꯏꯑꯣꯂꯣꯖꯤ ꯑꯦꯟꯗ ꯀꯦꯃꯤꯁꯇ꯭ꯔꯤꯒꯤ ꯀꯦꯊꯔꯤꯟ ꯗ꯭ꯔꯦꯅꯥꯟ,
ꯃꯁꯥꯆꯨꯁꯦꯇꯁ ꯏꯟꯁꯇꯤꯇ꯭ꯌꯨꯠ ꯑꯣꯐ ꯇꯛꯅꯣꯂꯣꯖꯤ (ꯑꯦꯝ
ꯑꯥꯏ ꯇꯤ) ꯒꯤ ꯗꯤꯄꯥꯔꯠꯃꯦꯟꯠ ꯑꯣꯐ ꯀꯦꯃꯤꯁꯇ꯭ꯔꯤ ꯑꯦꯟꯗ
ꯕꯥꯏꯑꯣꯂꯣꯖꯤꯒꯤ ꯖꯣꯑꯅꯤ ꯁ꯭ꯇꯨꯕꯦ ꯑꯃꯗꯤ ꯒ꯭ꯔꯦꯖꯨꯑꯦꯠ ꯃꯍꯩꯔꯣꯏ
ꯏꯂꯤꯖꯥꯕꯦꯊ ꯋꯤꯇꯦꯟꯕꯣꯔꯟ, ꯑꯦꯝ ꯑꯥꯏ ꯇꯤ ꯗ ꯂꯩꯔꯝꯕ ꯒ꯭ꯔꯦꯖꯨꯑꯦꯠ
ꯃꯍꯩꯔꯣꯏꯁꯤꯡ-ꯃꯥꯔꯀꯣ ꯖꯣꯁꯠ ꯑꯃꯁꯨꯡ ꯌꯤꯐꯦꯡ ꯋꯩꯅ ꯆꯍꯤ ꯀꯌꯥ
ꯆꯪꯅ ꯊꯤꯖꯤꯜꯂꯛꯄꯗꯒꯤ PhaC ꯁ꯭ꯇ꯭ꯔꯛꯆꯔ ꯈꯪꯕ ꯉꯝꯕꯒ
ꯂꯣꯏꯅꯅ ꯃꯁꯤꯅ ꯄ꯭ꯂꯥꯁꯇꯤꯛ ꯁꯨꯡꯕꯒꯤ ꯑꯔꯣꯟ ꯑꯊꯨꯞ ꯈꯔꯁꯨ
ꯄꯨꯊꯣꯛꯈ꯭ꯔꯦ꯫ ꯃꯁꯤꯅ PHAs ꯕꯨ ꯏꯟꯗꯁꯇ꯭ꯔꯤꯗ ꯄꯨꯊꯣꯛꯄ \

ꯥꯅꯕꯒꯤ ꯂꯝꯕꯤ ꯑꯃ ꯌꯥꯠꯂꯦ ꯍꯥꯏꯅ ꯂꯧꯕ ꯌꯥꯔꯦ꯫

ꯄꯣꯂꯤꯍꯥꯏꯗ꯭ꯔꯣꯛꯁꯤꯑꯜꯀꯥꯅꯣꯠ ꯁꯤꯟꯊꯦꯖꯒꯤ ꯁ꯭ꯇ꯭ꯔꯛꯆꯔ
ꯄꯨꯊꯣꯛꯄ ꯍꯥꯏꯕꯁꯤ ꯑꯔꯥꯏꯕ ꯑꯣꯏꯔꯝꯗꯦ꯫ ꯃꯔꯝꯗꯤ ꯃꯁꯤꯕꯨ
ꯀ꯭ꯔꯥꯏꯁꯇꯦꯜ ꯑꯣꯟꯊꯣꯛꯄꯗ ꯈꯨꯗꯣꯡꯆꯥꯗꯕ ꯀꯌꯥꯃꯨꯛ ꯃꯥꯌꯣꯛꯅꯈꯤ꯫

ꯑꯦꯟꯖꯥꯏꯝꯁꯤ ꯀ꯭ꯔꯥꯏꯁꯇꯦꯜ ꯑꯣꯟꯊꯣꯛꯂꯕ ꯇꯨꯡꯗ ꯑꯦꯛꯁꯔꯦ
ꯀ꯭ꯔꯥꯏꯁꯇꯦꯂꯣꯒ꯭ꯔꯥꯐꯤꯒꯤ ꯃꯇꯦꯡꯅ ꯁ꯭ꯇ꯭ꯔꯛꯆꯔ ꯄꯨꯊꯣꯛꯄꯅꯤ꯫

ꯀ꯭ꯔꯥꯏꯁꯇꯦꯜ ꯑꯣꯟꯊꯣꯛꯄꯒꯤ ꯊꯕꯛꯁꯤ ꯃꯥꯀꯦꯌꯥ ꯖꯣꯁꯠ ꯑꯃꯗꯤ
ꯌꯤꯐꯦꯡ ꯋꯩꯅ ꯑꯇꯣꯞꯄ ꯄ꯭ꯔꯣꯖꯦꯛ ꯑꯃ ꯑꯣꯏꯅ ꯄꯥꯏꯈꯠꯈꯤ꯫

ꯃꯈꯣꯏ ꯑꯅꯤꯅ ꯑꯦꯝ ꯑꯥꯏ ꯇꯤ ꯊꯥꯗꯣꯛꯇ꯭ꯔꯤꯉꯩꯗ ꯑꯦꯟꯖꯥꯏꯝꯁꯤꯕꯨ
ꯀ꯭ꯔꯥꯏꯁꯇꯦꯜ ꯑꯣꯟꯊꯣꯛꯄ ꯉꯝꯈꯤ꯫ ꯀ꯭ꯔꯥꯏꯏꯁꯇꯦꯜꯗꯨꯗ
ꯄꯥꯡꯊꯣꯛꯈꯤꯕ ꯑꯦꯛꯁꯔꯦ ꯀ꯭ꯔꯥꯏꯁꯇꯦꯂꯣꯒ꯭ꯔꯥꯐꯤꯗꯒꯤ ꯐꯪꯂꯛꯈꯤꯕ
ꯗꯦꯇꯥꯁꯤꯡꯗꯨ ꯋꯤꯇꯦꯟꯕꯣꯔꯟꯅ ꯑꯦꯅꯥꯂꯥꯏꯁꯤꯁ ꯇꯧꯕꯗꯒꯤ PhaC

ꯗ ꯆꯞ ꯃꯥꯟꯅꯕ ꯁꯕꯌꯨꯅꯤꯠ ꯑꯅꯤ ꯌꯥꯎꯏ ꯍꯥꯏꯕ ꯈꯪꯂꯛꯈꯤ꯫ ꯁꯕꯌ
ꯨꯅꯤꯠ ꯑꯅꯤꯁꯤꯅ ꯗꯥꯏꯃꯔ ꯁꯦꯝꯃꯤ꯫ ꯗꯥꯏꯃꯔ ꯍꯥꯏꯔꯒ ꯁ꯭ꯇ꯭ꯔꯛꯆꯔ
ꯃꯥꯟꯅꯕ ꯃꯣꯅꯣꯃꯔ ꯑꯅꯤꯕꯨ ꯀꯦꯃꯤꯀꯦꯜ ꯕꯣꯟꯗꯅ ꯐꯥꯖꯤꯟꯗꯨꯅ ꯂꯩꯕ
ꯃꯣꯂꯤꯀꯨꯂꯔ ꯀꯝꯄ꯭ꯂꯦꯛꯁ ꯑꯃꯅꯤ꯫ ꯃꯁꯤ ꯇꯨꯔꯦꯜꯅ ꯊꯠꯇꯨꯅ
ꯂꯩꯕ ꯑꯆꯧꯕ ꯁꯍꯔ ꯑꯅꯤꯕꯨ ꯊꯣꯡ ꯑꯃꯅ ꯁꯝꯅꯍꯟꯕꯒ ꯃꯥꯟꯅꯅ
ꯂꯧꯕ ꯌꯥꯏ꯫ ꯁꯕꯌꯨꯅꯤꯠ ꯈꯨꯗꯤꯡꯃꯛꯇ ꯄ꯭ꯂꯥꯁꯇꯤꯛ ꯁꯨꯡꯅꯕꯒꯤ
ꯔꯤꯑꯦꯛꯁꯟ ꯊꯣꯛꯐꯝ ꯑꯃꯃꯝ ꯌꯥꯎꯏ꯫ ꯑꯗꯨꯒ ꯑꯦꯟꯖꯥꯏꯝꯁꯤꯗ
ꯃꯈꯨꯜ ꯑꯅꯤꯈꯛ ꯌꯥꯎꯏ ꯍꯥꯏꯕꯁꯨ ꯑꯦꯅꯥꯂꯥꯏꯁꯤꯁ ꯑꯗꯨꯗꯒꯤ ꯈꯪꯕ
ꯉꯝꯂꯛꯈꯤ꯫ ꯃꯈꯨꯜ ꯑꯃꯗꯒꯤ ꯄ꯭ꯂꯥꯁꯇꯤꯛ ꯁꯨꯡꯅꯅꯕ ꯄꯣꯠꯆꯥꯛ
ꯍꯥꯏꯕꯗꯤ ꯍꯥꯏꯗ꯭ꯔꯣꯛꯁꯤꯑꯜꯀꯥꯏꯜ- ꯀꯣꯑꯦꯟꯖꯥꯏꯝ ꯑꯦ ꯆꯪꯂꯛꯏ
ꯑꯗꯨꯒ ꯑꯇꯣꯞꯄ ꯃꯈꯨꯜꯗꯨꯗꯒꯤꯅ ꯁꯨꯡꯂꯕ ꯄ꯭ꯂꯥꯁꯇꯤꯛꯇꯨ
ꯊꯣꯔꯛꯏ꯫ ꯃꯁꯤꯒꯤ ꯃꯇꯨꯡꯗ, ꯀꯣꯑꯦꯟꯖꯥꯏꯝ ꯑꯦꯒꯤ ꯁꯔꯨꯛꯇꯨ
ꯑꯃꯨꯛ ꯊꯣꯔꯛꯇꯨꯅ ꯑꯇꯣꯞꯄ ꯃꯣꯅꯣꯃꯔꯒ ꯑꯃꯨꯛ ꯄꯨꯟꯈꯤ꯫

ꯑꯦꯟꯖꯥꯏꯝꯁꯤꯗ ꯌꯥꯎꯔꯤꯕ ꯆꯪꯐꯝꯁꯤ ꯃꯌꯦꯛ ꯁꯦꯡꯅ ꯎꯕ ꯉꯝꯃꯤ
ꯃꯔꯝꯗꯤ ꯃꯁꯤꯒꯤ ꯑꯀꯣꯏꯕꯗ ꯑꯦꯃꯥꯏꯅꯣ ꯑꯦꯁꯤꯗꯁꯤꯡꯅ
ꯀꯣꯏꯁꯤꯟꯗꯨꯅ ꯂꯩ ꯍꯥꯏꯕꯗꯤ ꯑꯦꯟꯖꯥꯏꯝꯁꯤ ꯁꯦꯝꯂꯛꯄ ꯃꯇꯝꯗ
ꯑꯦꯃꯥꯏꯅꯣ ꯑꯦꯁꯤꯗꯁꯤꯡꯁꯤ ꯂꯦꯡꯗꯅ ꯑꯗꯨꯝ ꯂꯩ꯫ ꯑꯗꯨꯒ ꯊꯣꯛꯐꯝ
ꯑꯣꯏꯔꯤꯕ ꯃꯈꯨꯜ ꯑꯁꯤꯗꯤ ꯈꯔ ꯃꯌꯦꯛ ꯁꯦꯡꯅ ꯋꯥꯠꯂꯤ ꯃꯔꯝꯗꯤ
ꯃꯈꯨꯜꯁꯤ ꯈꯔ ꯄꯤꯛꯏ, ꯑꯗꯨꯕꯨ ꯊꯤꯖꯤꯜꯂꯣꯏꯁꯤꯡꯅ ꯃꯁꯤꯒꯤ
ꯑꯀꯣꯏꯕꯗ ꯂꯩꯔꯤꯕ ꯑꯦꯃꯥꯏꯅꯣ ꯑꯦꯁꯤꯗꯁꯤꯡꯒꯤ ꯃꯇꯦꯡꯅꯡꯡ
ꯆꯥꯎꯔꯥꯛꯄ ꯁꯛꯇꯝ ꯑꯃꯗꯤ ꯁꯥꯒꯠꯄ ꯉꯝꯈꯤ꯫ ꯂꯦꯡꯗꯅ ꯂꯩꯍꯧꯕ
ꯑꯦꯃꯥꯏꯅꯣ ꯑꯦꯁꯤꯗꯁꯤꯡꯗꯨꯅ ꯑꯥꯔꯛ ꯃꯑꯣꯡ ꯃꯥꯟꯅ ꯃꯈꯨꯜꯗꯨꯕꯨ
ꯀꯣꯏꯁꯤꯟꯗꯨꯅ ꯂꯩꯍꯧꯏ꯫

ꯍꯧꯖꯤꯛ ꯑꯦꯟꯖꯥꯏꯝꯁꯤꯒꯤ ꯁ꯭ꯇ꯭ꯔꯛꯆꯔ ꯈꯪꯕ ꯉꯝꯂꯕꯁꯨ
ꯑꯦꯟꯖꯥꯏꯝꯁꯤꯅ ꯃꯇꯧ ꯀꯔꯝꯅ ꯄ꯭ꯂꯥꯁꯇꯤꯛ ꯁꯨꯡꯕꯒꯦ
ꯍꯥꯏꯕꯒꯤ ꯃꯇꯥꯡꯗꯗꯤ ꯆꯞ ꯆꯥꯕ ꯈꯪꯗ꯭ꯔꯤ꯫ ꯃꯁꯤꯒꯤ ꯊꯕꯛꯁꯤ
ꯈꯪꯅꯅꯕꯒꯤꯗꯃꯛ ꯗ꯭ꯔꯅꯥꯟꯒꯤ ꯂꯦꯕꯇ ꯃꯈꯥ ꯇꯥꯅ ꯊꯤꯖꯤꯜꯂꯤ꯫ ꯑꯁꯨꯝꯅ
ꯄꯥꯡꯊꯣꯔꯛꯈꯤꯕ ꯆꯥꯡꯌꯦꯡ ꯈꯨꯗꯤꯡꯃꯛꯇꯒꯤ ꯑꯅꯧꯕ ꯑꯃꯁꯨꯡ
ꯑꯍꯦꯟꯕ ꯂꯧꯁꯤꯡ ꯀꯌꯥꯁꯨ ꯈꯡꯕ ꯉꯝꯂꯛꯂꯤ ꯍꯥꯏꯅ ꯗ꯭ꯔꯦꯅꯥꯟꯅ
ꯐꯣꯡꯗꯣꯛꯂꯤ꯫ ꯍꯧꯖꯤꯛ ꯐꯥꯎꯕꯒꯤ ꯂꯩꯔꯤꯕ ꯇꯥꯡꯀꯛꯁꯤ ꯐꯥꯎꯕꯗ
ꯕꯥꯏꯑꯣꯇꯦꯛꯅꯣꯂꯣꯖꯤ ꯀꯝꯄꯦꯅꯤ ꯈꯔꯅ PhaC ꯁꯤꯖꯤꯟꯅꯗꯨꯅ

PHAs ꯁꯤꯡ ꯁꯨꯡꯅꯕꯒꯤ ꯊꯕꯛ ꯄꯥꯏꯈꯠꯂꯤ ꯑꯗꯨꯒ ꯑꯇꯣꯞꯄ
ꯑꯦꯟꯖꯥꯏꯝꯁꯤꯡ ꯁꯤꯖꯤꯟꯅꯔꯒ ꯄ꯭ꯂꯥꯁꯇꯤꯛ ꯃꯈꯜꯁꯤ ꯁꯨꯡꯅꯕꯒꯤ
ꯊꯧꯔꯥꯡꯁꯨ ꯇꯧꯅꯔꯤ꯫ ꯃꯥꯂꯦꯝꯒꯤ ꯃꯃꯤꯡ ꯂꯩꯔꯕ ꯀꯝꯄꯦꯅꯤ ꯑꯃꯅ
ꯑꯅꯥ ꯂꯥꯌꯦꯡ ꯑꯃꯗꯤ ꯍꯤꯗꯥꯛ ꯂꯥꯡꯊꯛꯀ ꯃꯔꯤ ꯂꯩꯅꯕꯗ ꯁꯤꯖꯤꯅꯕ
ꯄ꯭ꯂꯥꯁꯇꯤꯛꯁꯤ ꯁꯨꯡꯕ ꯍꯧꯈ꯭ꯔꯦ꯫ ꯑꯗꯨꯕꯨ ꯊꯕꯛꯁꯤ ꯄꯥꯡꯊꯣꯛꯄꯗ
ꯁꯦꯜ ꯆꯪꯕꯒꯤ ꯆꯥꯡꯒ ꯐꯪꯂꯛꯂꯤꯕ ꯀꯥꯟꯅꯕꯒ ꯌꯦꯡꯅꯕꯗ
ꯏꯀꯣꯅꯣꯃꯤꯛ ꯑꯣꯏꯗ꯭ꯔꯤ꯫ ꯍꯧꯖꯤꯛ ꯃꯤꯌꯥꯝꯅ ꯄꯥꯝꯅ ꯁꯤꯖꯤꯟꯅꯔꯤꯕ
ꯃꯍꯧꯁꯥꯗ ꯇꯨꯝꯗꯕ ꯄ꯭ꯂꯥꯁꯇꯤꯛꯀ ꯌꯦꯡꯅꯔꯨꯕꯗꯁꯨ ꯃꯃꯜ \

ꯥꯝꯅ ꯋꯥꯠꯂꯤ꯫ ꯍꯟꯗꯛ PHaC ꯑꯦꯟꯖꯥꯏꯝꯁꯤꯒꯤ ꯁ꯭ꯇ꯭ꯔꯛꯆꯔ
ꯄꯨꯊꯣꯔꯛꯄꯁꯤꯅꯁꯨ ꯏꯀꯣꯅꯣꯃꯤꯀꯦꯜ ꯑꯣꯏꯕ ꯃꯍꯧꯁꯥꯗ ꯇꯨꯝꯕ
ꯄ꯭ꯂꯥꯁꯇꯤꯛ ꯁꯥꯕꯃꯛꯇꯤ ꯉꯝꯈꯤꯔꯣꯏ ꯑꯗꯨꯕꯨ ꯃꯁꯤꯅ ꯑꯅꯧꯕ ꯑꯥꯁꯥ
ꯑꯃꯒꯤ ꯊꯣꯡꯗꯤ ꯍꯥꯡꯗꯣꯛꯂꯦ ꯍꯥꯏꯅ ꯂꯧꯕ ꯌꯥꯏ꯫ ꯃꯁꯤꯒꯤ ꯃꯇꯥꯡꯗ

‘Yield 10 Bioscience/Metabolix’ okTe SIeq PHAs

ꯃꯈꯜ ꯑꯃꯒꯤ ꯇꯦꯛꯅꯣꯂꯣꯖꯤꯕꯨ ꯑꯇꯣꯞꯄ ꯀꯝꯄꯦꯅꯤ ꯑꯃꯗ \

ꯣꯟꯕ ꯉꯝꯈ꯭ꯔꯕ ꯀꯝꯄꯦꯅꯤꯁꯤꯒꯤ ꯚꯥꯏꯁ ꯄ꯭ꯔꯁꯤꯗꯦꯟꯠ ꯑꯃꯁꯨꯡ
ꯆꯤꯐ ꯁꯥꯏꯟꯇꯤꯐꯤꯛ ꯑꯣꯐꯤꯁꯥꯔ ꯑꯣꯏꯔꯤꯕ ꯀ꯭ꯔꯤꯁꯇꯤ ꯁ꯭ꯅꯦꯜꯅꯁꯨ
ꯑꯦꯟꯖꯥꯏꯝꯁꯤꯒꯤ ꯁ꯭ꯇ꯭ꯔꯛꯆꯔ ꯄꯨꯊꯣꯔꯛꯄꯁꯤꯅ ꯃꯃꯜ ꯍꯣꯡꯕ
ꯄ꯭ꯂꯥꯁꯇꯤꯛꯃꯛꯇꯤ ꯁꯥꯕ ꯉꯝꯈꯤꯔꯣꯏ ꯑꯗꯨꯕꯨ ꯃꯁꯤꯅ ꯑꯅꯧꯕ
ꯄ꯭ꯂꯥꯁꯇꯤꯛ ꯁꯥꯕꯒ ꯂꯣꯏꯅꯅ ꯑꯅꯧꯕ ꯁꯤꯖꯤꯟꯅꯐꯝ ꯀꯌꯥꯗꯤ
ꯄꯨꯊꯣꯛꯄ ꯉꯝꯍꯜꯂꯛꯄ ꯌꯥꯏ ꯍꯥꯏꯔꯤ꯫ ꯃꯍꯥꯛꯅ ꯐꯣꯡꯗꯣꯛꯄꯒꯤ
ꯃꯇꯨꯡꯏꯟꯅ ꯑꯦꯟꯖꯥꯏꯝꯁꯒꯤ ꯁ꯭ꯇ꯭ꯔꯛꯆꯔ ꯑꯃꯗꯤ ꯃꯁꯤꯅ ꯃꯊꯧ
ꯇꯧꯕꯒꯤ ꯃꯇꯥꯡꯗ ꯍꯆꯤ 20 ꯂꯣꯝ ꯃꯃꯥꯡꯗꯒꯤ ꯁꯥꯏꯟꯇꯤꯐꯤꯛ
ꯀꯃꯨꯅꯤꯇꯤꯅ ꯈꯪꯅꯤꯡꯗꯨꯅ ꯂꯥꯛꯈꯤꯕꯅꯤ꯫ ꯃꯁꯤꯅ ꯍꯦꯟꯅ ꯐꯕ,
ꯏꯀꯣꯅꯣꯃꯤꯀꯦꯜ ꯑꯣꯏꯕ ꯑꯃꯁꯨꯡ ꯃꯍꯧꯁꯥꯗ ꯇꯨꯝꯕ PHAs

ꯄꯨꯊꯣꯔꯛꯇꯨꯅ ꯃꯥꯂꯦꯝꯒꯤ ꯐꯤꯚꯝ ꯍꯦꯟꯅ ꯐꯒꯠꯍꯟꯕꯒ ꯂꯣꯏꯅꯅ
ꯇꯥꯏꯕꯪ ꯃꯤ ꯑꯩꯈꯣꯏꯒꯤꯁꯨ ꯍꯦꯟꯅ ꯀꯥꯟꯅꯕ ꯄꯤꯔꯛꯈꯤꯒꯅꯤ ꯍꯥꯏꯅ
ꯑꯥꯁꯥꯁꯤ ꯊꯝꯈꯤꯁꯤ, ꯍꯧꯖꯤꯛꯀꯤ ꯑꯣꯏꯅꯗꯤ꯫

IMPHAL, WEDNESDAY, FEBRUARY 01, 2017 ꯌꯨꯝꯁꯀꯩꯁ, ꯐꯥꯏꯔꯦꯟꯒꯤ 5 ꯅꯤ ꯄꯥꯟꯕ, ꯃꯥꯂꯤꯌꯥ ꯀꯨꯝꯁꯤꯡ 3414 ꯍꯨꯏꯌꯦꯟ ꯂꯥꯟꯄꯥꯎ
2 SOjgmOM HUEIYEN LANPAO

ꯍꯨꯏꯌꯦꯟ ꯂꯥꯟꯄꯥꯎ

...ꯑꯦꯗꯤꯇꯔꯗ ꯊꯥꯔꯛꯄ ꯆꯤꯊꯤ...

ꯏꯀꯥꯏꯈꯨꯝꯅꯖꯔꯤꯕ ꯑꯦꯗꯤꯇꯔ,
ꯏꯝꯐꯥꯜ ꯁꯍꯔꯒꯖꯤ ꯃꯅꯨꯡꯗ \

ꯥꯝꯅ ꯃꯔꯨꯑꯣꯏꯕ ꯑꯃꯗꯤ ꯌꯥꯝꯅ ꯐꯤꯚꯝ
ꯆꯥꯗꯕ ꯂꯝꯕꯤ ꯑꯁꯥꯡꯕ ꯑꯃ ꯍꯥꯏꯕ
ꯇꯥꯔꯕꯗꯤ ꯊꯥꯡꯃꯩꯕꯟꯗ ꯑꯦꯁꯦꯝꯕ꯭ꯂꯤ
ꯀꯟꯁꯇꯤꯇꯨꯑꯦꯅꯁꯤꯒꯤ ꯃꯅꯨꯡꯗ ꯂꯩꯔꯤꯕ
ꯈꯨꯌꯥꯊꯣꯡ ꯇ꯭ꯔꯥꯐꯤꯛ ꯑꯥꯏꯂꯦꯟꯗꯗꯒꯤ
ꯀꯦꯄꯤꯇꯦꯜ ꯕ꯭ꯔꯤꯖ ꯐꯥꯎꯕ ꯆꯥꯎꯔꯥꯛꯅ
ꯀꯤꯂꯣꯃꯤꯇꯔ 1 ꯔꯣꯝ ꯁꯥꯡꯕ ꯂꯝꯕꯤ
ꯑꯁꯤꯅ ꯑꯣꯏꯔꯤ꯫ ꯂꯝꯕꯤ ꯑꯁꯤꯒꯤ
ꯅꯣꯡꯆꯨꯞ ꯊꯪꯕ ꯁꯔꯨꯛ ꯑꯁꯤꯅ ꯌꯥꯝꯅ ꯁꯥꯊꯤꯅ
ꯐꯠꯇꯦ ꯑꯗꯨꯒ ꯅꯣꯡꯄꯣꯛ ꯊꯪꯕ ꯁꯔꯨꯛ
ꯑꯁꯤꯅ ꯐꯤꯚꯝ ꯈꯤꯇꯪ ꯐꯔꯤ꯫ ꯅꯣꯡꯆꯨꯞ
ꯊꯪꯕ ꯂꯝꯕꯤ, ꯋꯥꯟ ꯋꯦ ꯑꯣꯏꯔꯤꯕ ꯑꯁꯤ
ꯃꯔꯨꯑꯣꯏꯅ ꯀꯣꯏꯂꯥꯁꯥ ꯑꯀꯥꯏꯕ ꯌꯥꯝꯅ \

ꯥꯎꯕ, ꯄꯣꯠꯍꯣꯜ ꯌꯥꯝꯅ ꯆꯥꯎꯅꯅ ꯑꯃꯁꯨꯡ
ꯀꯨꯠꯅ ꯂꯩꯕ, ꯎꯐꯨꯜ ꯊꯣꯛꯄ ꯂꯝꯕꯤ ꯈꯨꯕ
ꯑꯃꯁꯨꯡ ꯒꯥꯔꯤ ꯀꯨꯡꯅ ꯆꯠꯄꯗꯒꯤ ꯂꯝꯕꯤ
ꯑꯁꯤꯗ ꯆꯠꯂꯤꯕ ꯒꯥꯔꯤꯁꯤꯡ ꯃꯔꯨꯑꯣꯏꯅ
ꯂꯥꯏꯠ ꯚꯦꯍꯤꯀꯜꯁꯤꯡ ꯌꯥꯝꯅ ꯇꯞꯅ,
ꯊꯋꯥꯏ ꯋꯥꯅ ꯆꯠꯂꯤ ꯍꯥꯏꯕꯗ ꯍꯥꯏꯃꯟꯕ
ꯊꯣꯛꯂꯣꯏ꯫ ꯂꯝꯕꯤ ꯑꯁꯤꯒꯤ ꯀꯥ ꯍꯦꯟꯅ
ꯐꯠꯇꯕ ꯃꯐꯟꯝ ꯑꯅꯤ ꯄꯟꯕ ꯇꯥꯔꯕꯗꯤ
ꯇ꯭ꯔꯥꯐꯤꯛ ꯄꯣꯏꯟꯠꯇꯒꯛꯤ ꯃꯨꯇꯨꯝ ꯂꯩꯔꯛ
ꯃꯄꯥ ꯑꯃꯗꯤ ꯃꯨꯖꯤ ꯂꯩꯔꯛ ꯃꯄꯥꯗꯒꯤ ꯋꯥꯊꯝ
ꯂꯩꯔꯛ ꯃꯆꯥ ꯑꯁꯤꯅꯤ꯫ ꯐꯣꯔ ꯍ꯭ꯋꯤꯜꯂꯔ
ꯑꯃꯗꯤ ꯊ꯭ꯔꯤ ꯍ꯭ꯋꯤꯜꯂꯔꯗ ꯅꯠꯇꯅ ꯇꯨ
ꯍ꯭ꯋꯤꯜꯂꯔ ꯊꯧꯕ ꯐꯥꯎꯕ ꯃꯐꯝ ꯃꯇꯦꯛ ꯑꯅꯤ
ꯑꯁꯤ ꯆꯠꯅꯕ, ꯂꯥꯟꯊꯣꯛꯅꯕ ꯍꯣꯠꯅꯕꯗ
ꯑꯋꯥꯕ ꯑꯣꯏꯒꯅꯤ꯫

ꯂꯝꯕꯤ ꯐꯠꯇꯕ ꯃꯐꯝꯁꯤꯡ ꯑꯁꯤ
ꯂꯥꯟꯊꯣꯛꯇꯨꯅ ꯑꯐꯕ, ꯑꯅꯥꯟꯕ ꯆꯠꯅꯕ
ꯍꯣꯠꯅꯕꯗ ꯂꯥꯏꯠ ꯚꯦꯍꯤꯀꯜꯁꯤꯡ
ꯃꯔꯨꯑꯣꯏꯅ ꯃꯦꯖꯤꯛ, ꯀꯥꯔ ꯑꯃꯗꯤ
ꯑꯣꯇꯣꯔꯤꯛꯁꯣꯁꯤꯡ ꯃꯤ ꯈꯔ ꯀꯣꯝꯕ ꯑꯌ
ꯨꯛ ꯑꯃꯗꯤ ꯅꯨꯃꯤꯗꯥꯡꯒꯤ ꯃꯇꯝꯗ ꯑꯅꯥꯟꯕ
ꯈꯔ ꯐꯕ ꯅꯣꯡꯄꯣꯛ ꯊꯪꯕ ꯂꯝꯕꯤ ꯇꯪꯈꯥꯏ
ꯑꯁꯤꯗ ꯀꯟꯅ ꯊꯧꯅꯩ꯫ ꯀꯟꯅ ꯊꯧꯕ ꯑꯃꯗꯤ
ꯇ꯭ꯔꯥꯐꯤꯛ ꯀꯣꯝꯕꯒꯤ ꯇꯥꯟꯖꯥ ꯑꯁꯤꯗ ꯋꯥꯟ
ꯋꯦ ꯑꯣꯏꯅ ꯁꯤꯖꯤꯟꯅꯕ ꯂꯝꯕꯤ ꯑꯁꯤ ꯇꯨ ꯋꯦ
ꯇ꯭ꯔꯥꯐꯤꯛ ꯑꯣꯟꯊꯣꯛꯄꯗꯒꯤ ꯀꯔꯤꯒꯨꯝꯕ
ꯃꯇꯝꯗ ꯑꯦꯛꯁꯤꯗꯦꯟꯠ ꯊꯣꯛꯀꯦ ꯇꯧꯕ \

ꯥꯝꯅ ꯌꯥꯎꯈ꯭ꯔꯦ꯫

ꯑꯁꯤꯒꯨꯝꯕ ꯑꯦꯛꯁꯤꯗꯦꯟꯠ
ꯊꯣꯛꯅꯕꯒꯤ ꯃꯔꯝ ꯑꯣꯏꯍꯜꯂꯤꯕ
ꯒꯥꯔꯤ ꯊꯧꯔꯤꯕꯁꯤꯡ (ꯃꯔꯨꯑꯣꯏꯅ ꯑꯣꯇꯣ
ꯔꯤꯛꯁꯣꯁꯤꯡ) ꯅ ꯆꯠꯅ ꯀꯥꯡꯂꯣꯟ ꯂꯥꯟꯅ
ꯂꯝꯕꯤ ꯐꯠꯇꯕꯒꯤ ꯈꯨꯗꯣꯡꯆꯥꯕ ꯂꯧꯕꯤꯗꯅꯕ
ꯑꯃꯗꯤ ꯅꯤꯌꯝ ꯆꯨꯝꯅ ꯒꯥꯔꯤ ꯊꯧꯕꯤꯅꯕ
ꯂꯣꯏꯅꯅ ꯇꯦꯟꯈ꯭ꯔꯕ ꯐꯨꯠ 200-300
ꯃꯨꯛꯇ ꯁꯥꯡꯕ ꯑꯀꯥꯏꯕ ꯃꯐꯝꯁꯤꯡ ꯑꯁꯤ
ꯃꯔꯤ ꯂꯩꯅꯕ ꯂꯣꯏꯁꯪꯒꯖꯤ ꯃꯤꯑꯣꯏꯁꯤꯡꯅ
ꯁꯦꯝꯖꯤꯟ ꯁꯥꯕꯤꯔꯕꯗꯤ ꯄꯨꯝꯅꯃꯛꯀꯤ ꯑꯐꯕ
ꯑꯣꯏꯒꯅꯤ ꯑꯃꯁꯨꯡ ꯊꯣꯛꯍꯟꯅꯤꯡꯗꯕ
ꯑꯦꯛꯁꯤꯗꯦꯟꯠ ꯀꯌꯥ ꯊꯣꯛꯄ ꯌꯥꯕꯗꯒꯤ
ꯀꯟꯕ ꯉꯝꯒꯅꯤ ꯍꯥꯏꯖꯅꯤꯡꯏ꯫

ꯑꯗꯣꯝꯒꯤ- ꯇꯤ ꯑꯩꯆ ꯔꯟꯖꯤꯠ,
ꯊꯥꯡꯃꯩꯕꯟꯗ
ꯑꯐꯕ ꯂꯝꯕꯤ ꯆꯠꯅꯕ ꯍꯣꯠꯅꯕꯗ
ꯑꯦꯛꯁꯤꯗꯦꯟꯠ ꯊꯣꯛꯀꯗꯧꯔꯦ
ꯀꯗꯔꯒꯤ ꯂꯝꯁꯤꯗ ꯀꯗꯔ ꯃꯆꯥ ꯃꯆꯥꯒꯖꯤ ꯆꯟꯅꯐꯝ
ꯈꯜꯂꯨꯔꯒ ꯌꯥꯝ ꯅꯣꯛꯅꯤꯡꯏ ꯑꯩꯈꯣꯏꯒꯤ ꯂꯝꯗꯝꯁꯤ꯫

ꯌꯥꯝꯅ ꯀꯥ ꯍꯦꯟꯅ ꯌꯥ ꯍꯒꯠꯅꯤꯡꯂꯨꯕꯒꯖꯤ ꯋꯥꯗꯤ ꯅꯠꯇꯦ꯫

ꯁꯨꯝ ꯈꯜꯂꯨꯔꯒ ꯅꯣꯛꯅꯤꯡꯕꯒꯤ ꯃꯆꯥꯛꯁꯤ ꯑꯁꯨꯛꯀꯤ
ꯃꯇꯤꯛ ꯌꯥꯝꯅ ꯂꯩꯔꯝꯃꯤ꯫ ꯍꯤꯔꯝ ꯈꯨꯗꯤꯡꯗ ꯁꯤꯃꯗꯤ
ꯀꯗꯔ ꯌꯥꯎꯗꯕ ꯑꯁꯦꯡꯕꯅꯤ ꯍꯥꯏꯕꯁꯤ ꯊꯣꯏꯗꯣꯛꯅ
ꯎꯕ ꯐꯪꯗꯦ꯫ ꯂꯥꯏꯔꯤꯛ ꯍꯩꯕ ꯍꯩꯇꯕ, ꯏꯅꯥꯛ ꯈꯨꯟꯕ-

ꯈꯨꯟꯗꯕ, ꯊꯕꯛ ꯇꯧꯕ ꯇꯧꯗꯕ, ꯑꯆꯧ ꯑꯁꯥꯡꯗꯒꯤꯅ ꯑꯥ
ꯃꯈꯥ ꯄꯤꯛꯀ꯭ꯔꯨ ꯐꯥꯎꯕꯁꯤꯒꯤ ꯃꯅꯨꯡꯗ ꯂꯩꯔꯤꯕ ꯃꯤꯄꯨꯝ
ꯈꯨꯗꯤꯡꯃꯛꯁꯤ ꯑꯣꯟꯊꯣꯛꯅ ꯀꯗꯔꯁꯤ ꯍꯩꯅꯈ꯭ꯔꯖꯥꯠꯅꯤ꯫

ꯃꯃꯥꯡꯉꯩꯗꯒꯤ ꯍꯥꯏꯅꯔꯛꯄ ꯑꯃ ꯂꯩ꯫ ꯑꯃꯨꯛꯇꯪ
ꯐꯥꯈ꯭ꯔꯕ ꯏꯁꯩꯗꯤ ꯅꯣꯡꯃꯇ ꯑꯣꯏꯔꯁꯨ ZIT ꯍꯥꯏꯗꯨꯅ,
ꯃꯁꯤ ꯑꯣꯟꯊꯣꯛꯅ ꯆꯨꯝꯈ꯭ꯔꯕ ꯋꯥꯅꯤ꯫ ꯃꯤꯄꯨꯝꯅꯃꯛꯁꯤ
ꯃꯄꯨꯛꯆꯦꯜꯁꯦ ꯏꯁꯦꯡ ꯁꯦꯡꯗꯦꯗ꯫ ꯈꯤꯇꯪ ꯐꯔꯤꯕ ꯍꯥꯏꯕꯨ
ꯑꯩ ꯈꯛꯇ ꯉꯥꯏꯔꯕ꯭ꯔ ꯅꯤꯡꯏ꯫ ꯁꯤꯁꯨ ꯅꯣꯛꯅꯤꯡꯕ
ꯋꯥꯅꯤ꯫ ꯃꯤꯅꯁꯨ ꯅꯣꯛꯅꯤ ꯑꯩꯁꯨ ꯑꯗꯨꯝ ꯋꯥꯔꯦꯡꯁꯤ ꯏꯅ
ꯏꯅ ꯑꯗꯨꯝ ꯅꯣꯛꯆꯔꯤ꯫ ꯍꯥꯏꯖꯅꯤꯡꯂꯤꯕꯗꯤ, ꯃꯤ ꯃꯁꯥ
ꯃꯁꯥꯅꯗꯤ ꯃꯈꯣꯏꯅ ꯇꯧꯔꯤꯁꯤ ꯑꯐꯕꯅꯤ ꯑꯆꯨꯝꯕꯅꯤ
ꯍꯥꯏꯅ ꯑꯗꯨꯝ ꯈꯟꯕꯤꯕ, ꯑꯗꯨꯒ ꯑꯇꯣꯞꯄ ꯃꯤꯅꯗꯤ ꯃꯥꯅ
ꯇꯧꯖꯁꯥꯔꯤꯁꯦ ꯍꯥꯏꯅ ꯈꯟꯅꯕ ꯉꯥꯛꯇꯅꯤ꯫ ꯌꯥꯝ ꯍꯩꯔꯕꯣꯏ,
ꯀꯗꯔ ꯇꯧꯅꯔꯤꯕ ꯃꯌꯥꯝꯁꯤꯅ ꯁꯣꯏꯗꯅ ꯁꯥꯎꯅꯔꯛꯂꯅꯤ꯫

ꯀꯗꯔ ꯍꯥꯏꯕꯁꯤꯒꯤ ꯆꯥꯟꯅꯕ ꯃꯇꯥꯡꯁꯨ ꯂꯩꯇꯕꯗꯤ
ꯅꯠꯇꯦ꯫ ꯄꯨꯟꯁꯤ ꯍꯥꯏꯕꯁꯤꯗꯤ ꯀꯗꯔꯁꯨ ꯍꯩꯒꯗꯕꯅꯤ,
ꯏꯁꯨ ꯁꯨꯅ ꯍꯩꯒꯗꯕꯅꯤ꯫ ꯍꯩꯍꯧꯗ꯭ꯔꯕ ꯃꯤꯗꯨꯗꯤ ꯍꯧꯖꯤꯛꯀꯤ
ꯃꯇꯝꯁꯤꯗ ꯍꯤꯡꯕꯗ ꯈꯔ ꯋꯥꯔꯅꯤ꯫ ꯍꯤꯡꯒꯗꯕꯗꯤ \

ꯥꯗꯕꯅꯤꯅ ꯀꯗꯔ ꯈꯔ ꯈꯔꯗꯤ ꯇꯝꯁꯤꯟꯕ ꯐꯩ ꯍꯥꯏꯅꯕꯁꯨ
ꯑꯗꯨꯝ ꯌꯥꯎꯗꯕ ꯅꯠꯇꯦ꯫ ꯍꯣꯏꯗ ꯀꯗꯔꯒꯤ ꯋꯥꯁꯤꯗꯤ
ꯍꯅꯨꯕꯤ ꯐꯥꯎ ꯑꯗꯨꯝ ꯇꯧꯏ꯫ ꯃꯃꯤꯠꯁꯨ ꯎꯗ꯭ꯔꯕ, ꯆꯠꯄꯁꯨ
ꯉꯝꯗ꯭ꯔꯕ ꯃꯈ꯭ꯋꯥꯡꯒ ꯁꯥꯊꯤꯅ ꯀꯣꯜꯂꯕ ꯍꯧꯒꯠꯂꯒ ꯋꯥꯅ
ꯆꯠꯄꯗ ꯀꯣꯟꯊꯔꯛꯄ ꯃꯀꯣꯛꯅ ꯃꯈꯨꯎ ꯃꯈꯥ ꯌꯧꯅ
ꯀꯣꯜꯂꯕꯗꯨꯐꯥꯎꯕ ꯀꯗꯔ ꯑꯗꯨꯝ ꯇꯧꯏ꯫ ꯃꯔꯤ ꯃꯇꯥꯁꯤꯡꯅ
ꯂꯥꯛꯄꯗ ꯏꯕꯦꯟꯁꯦ ꯁꯤꯅꯅꯦ ꯀꯩꯅꯣꯃ ꯑꯉꯥꯡꯗ ꯂꯩꯍꯜꯂꯒ
ꯆꯥꯅꯤꯡꯕ ꯆꯥꯎ ꯍꯥꯏꯅ ꯂꯨꯄꯥ 100 ꯒ ꯄꯅꯤꯔꯝꯕꯗꯨ ꯂꯣꯠꯇꯨꯅ
ꯊꯝꯃꯤ꯫ ꯏꯃꯨꯡꯗꯨꯗ ꯇꯥꯟꯖꯥ ꯑꯃ ꯆꯥꯍꯧꯗꯗꯅ ꯑꯦꯟꯖꯥꯡ
ꯊꯨꯝ ꯊꯥꯛꯂꯝꯗꯥꯏꯗ ꯏꯃꯨꯡꯗꯨꯒꯤ ꯃꯧꯅ, ‘ꯑꯕꯣꯛ ꯉꯁꯥꯏ
ꯃꯤꯅ ꯁꯦꯜ ꯄꯤꯔꯝꯕꯗꯨ ꯈꯤꯠꯇ ꯄꯤꯌꯨ ꯊꯨꯝ ꯄꯦꯀꯦꯠ
ꯑꯃꯠꯇ ꯂꯩꯍꯜꯂꯨꯒꯦ, ꯊꯨꯝ ꯂꯩꯔꯝꯗ꯭ꯔꯦ’ ꯍꯥꯏꯕꯗ ꯑꯗꯨꯛ
ꯀꯣꯜꯂꯕ ꯍꯅꯨꯕꯤꯗꯨꯅ, ꯂꯩꯇ꯭ꯔꯦ ꯍꯥꯏꯅ ꯈꯨꯝꯃꯤꯅꯤ ꯀꯩꯅꯣ,
ꯀꯗꯔꯒꯤ ꯋꯥꯁꯤꯗꯤ ꯑꯔꯣꯏꯕꯤꯅꯤ ꯇꯧꯅꯔꯤꯁꯦ꯫ ꯀꯩꯊꯦꯜ
ꯐꯝꯕꯤ ꯐꯥꯎꯕ ꯑꯔꯣꯏꯕꯤ ꯊꯥꯗꯨꯅ ꯀꯗꯔ ꯇꯧꯏ꯫ ꯍꯪꯒꯥꯝ
ꯃꯀꯥꯗꯨ ꯐꯖꯔꯦ ꯄꯨꯜꯂꯤꯗꯨ, ꯃꯀꯥꯒꯗꯨ ꯂꯦꯛ ꯂꯦꯛ ꯂꯥꯎꯔꯗꯅ
ꯐꯖꯔꯦ ꯍꯥꯏꯅ ꯈꯜꯂꯒ ꯃꯄꯨꯟ ꯑꯃ ꯂꯩꯔꯛꯏ, ꯑꯗꯨꯒ
ꯍꯪꯒꯥꯝ ꯄꯦꯔꯦ ꯃꯄꯨꯟꯗꯨꯁꯨ ꯐꯖꯩ ꯆꯝꯐꯨꯠ ꯆꯥꯅꯤꯡꯉꯤ
ꯍꯥꯏꯅ ꯑꯃꯒ ꯂꯩꯔꯛꯏ꯫ ꯌꯨꯝ ꯌꯧꯔꯒꯗꯤ ꯃꯀꯥ ꯑꯆꯧꯕ
ꯐꯖꯕꯗꯨꯅ ꯌꯣꯝꯃꯒ ꯃꯅꯨꯡꯗ ꯃꯃꯤꯠ ꯀꯥꯛꯄꯗ ꯉꯥꯏꯔꯤꯕ
ꯍꯪꯒꯥꯝ ꯄꯥꯝꯕꯤ ꯃꯆꯥ ꯃꯆꯥꯁꯨ ꯑꯗꯨꯝ ꯌꯥꯎꯔꯝꯃꯤ꯫ ꯁꯤꯁꯨ
ꯀꯗꯔ ꯅꯠꯇ꯭ꯔꯣ? ꯍꯪꯒꯥꯝ ꯄꯦꯔꯦꯗꯨꯁꯨ, ꯏꯃꯧꯗ ꯆꯝꯐꯨꯠ
ꯐꯨꯠꯂꯨ ꯍꯥꯏꯅ ꯄꯤꯔꯨꯕꯕꯨ, ꯄꯦꯔꯦꯗꯤ ꯃꯄꯥꯟꯗ ꯎꯔꯤꯕꯗꯨꯗꯒꯤ
ꯍꯦꯟꯅ ꯑꯃꯠꯇ ꯀꯥꯔꯝꯗ꯭ꯔꯦ, ꯃꯅꯨꯡꯗꯗꯤ ꯍꯪꯒꯥꯝ ꯑꯄꯠꯄ
ꯍꯪꯒꯥꯝꯄꯥꯟ ꯆꯪꯂꯕ ꯆꯥꯕꯗ ꯍꯥꯎꯔꯔꯣꯏꯗꯕ ꯉꯥꯛꯇ \

ꯥꯎꯔꯝꯃꯤ, ꯁꯤꯃꯁꯨ ꯁꯥꯊꯤꯕ ꯀꯗꯔꯒꯤ ꯃꯅꯨꯡ ꯆꯟꯗ꯭ꯔꯣ?

ꯁꯤꯗꯕꯨ ꯀꯃꯥꯏ ꯅꯣꯛꯅꯤꯡꯉꯣꯏꯗꯧꯔꯤꯅꯣ? ꯑꯩꯈꯣꯏ ꯃꯃꯥꯅ
ꯑꯩꯅ ꯊꯕꯛ ꯆꯠꯂꯝꯗꯥꯏꯗ, ꯁꯦꯜ ꯈꯤꯠꯇ ꯄꯤꯔꯝꯃꯨ ꯍꯥꯏꯕꯗ
ꯑꯩꯅ, ꯀꯗꯥꯏꯗꯒꯤ ꯁꯦꯜꯅꯣ, ꯑꯃꯠꯇ ꯌꯥꯎꯗ꯭ꯔꯦ ꯍꯥꯏꯅ
ꯄꯤꯔꯝꯗꯅ ꯊꯣꯔꯛꯂꯒ ꯃꯤ ꯈꯔ ꯊꯦꯡꯅꯕꯗ ꯑꯌꯥꯎꯕꯃꯈꯩ
ꯆꯥꯗꯤꯡ ꯑꯃꯨꯛ ꯇꯧꯈꯤꯕꯗꯨ ꯅꯣꯛꯅꯤꯡꯕ ꯐꯥꯒꯤ ꯃꯆꯥ ꯃꯆꯥꯅꯤ
ꯍꯥꯏꯅ ꯀꯃꯥꯏꯅ ꯅꯣꯛꯅꯤꯡꯂꯣꯏꯗꯧꯔꯤꯕꯅꯣ?

ꯀꯅꯥꯒꯤ ꯑꯣꯐꯤꯁ, ꯀꯅꯥꯒꯤ ꯍꯣꯇꯦꯜ ꯂꯣꯏꯅꯃꯛ
ꯀꯗꯔꯅꯤ꯫ ꯆꯦ ꯑꯃꯇꯪ ꯊꯥꯖꯤꯟꯕꯗ ꯂꯦ-ꯂꯥ, ꯂꯦ-ꯂꯥ ꯇꯧꯗꯨꯅ
ꯁꯦꯜ ꯍꯦꯛ ꯄꯤꯗ꯭ꯔꯤꯈꯩ ꯊꯕꯛ ꯑꯃꯠꯇ ꯇꯧꯅꯗꯕ
ꯂꯝꯅꯤ꯫ ꯊꯤꯀꯥꯗꯔꯁꯨ ꯂꯝꯕꯤ ꯁꯦꯝꯕ, ꯌꯨꯝ ꯁꯥꯕ, ꯅꯥꯂꯥ
ꯆꯟꯕ, ꯂꯥꯏꯅꯃꯛ ꯀꯗꯔꯅꯤ꯫ ꯃꯉꯣꯟꯗꯒꯤ ꯑꯃꯨꯛ
ꯑꯦꯁ ꯑꯣꯅ, ꯑꯦꯟꯖꯤꯅꯤꯌꯥꯔꯅ ꯀꯗꯔ ꯇꯧꯕꯤ, ꯃꯣꯏꯗꯒꯤ
ꯑꯃꯨꯛ ꯑꯦꯁ ꯏꯅ ꯑꯃꯨꯛ ꯀꯗꯔ ꯇꯧꯕꯤ꯫ ꯃꯉꯣꯟꯗꯒꯤ
ꯑꯃꯨꯛ ꯃꯤꯅꯤꯁꯇꯔꯅ ꯀꯗꯔ ꯇꯧꯕꯤ ꯀꯗꯔ ꯃꯆꯥ ꯃꯆꯥ
ꯃꯌꯥꯝꯁꯤꯅ ꯄꯨꯟꯁꯤꯜꯂꯒ ꯂꯥꯁꯠꯇ ꯃꯥꯡꯖꯍꯧꯔꯤꯕꯅ
ꯈꯨꯟꯅꯥꯏ ꯑꯁꯤꯅꯤ꯫ ꯍꯣꯇꯦꯜꯁꯨ ꯑꯗꯨ ꯃꯉꯥꯏ, ꯉꯔꯥꯡꯒꯤ
ꯁꯤꯠꯍꯧꯗꯕ ꯕꯣꯔꯥ, ꯆꯥ ꯃꯌꯥꯝꯗꯨ ꯑꯌꯨꯛ ꯑꯉꯟꯕꯗ ꯂꯣꯟꯕ
ꯍꯧꯕ ꯁꯥꯔꯒ ꯁꯥꯍꯜꯂꯒ ꯌꯣꯜꯂꯤ꯫ ꯉꯔꯥꯡꯒꯤ ꯀꯅꯥꯒꯤ
ꯏꯁꯨ ꯁꯨꯈꯩ ꯉꯧꯅꯔꯨꯔꯕ ꯊꯥꯎ ꯑꯃꯟꯕꯗꯨ ꯑꯍꯟꯕ ꯈꯔ
ꯍꯩꯖꯤꯜꯂꯒ ꯐꯣꯡ ꯐꯣꯡ ꯁꯥꯍꯟꯕꯗ ꯑꯔꯤꯕꯅꯤ ꯑꯅꯧꯕꯅꯤ
ꯈꯡꯗꯕꯅꯤꯅ ꯆꯞ ꯃꯥꯟꯅꯔꯦ, ꯃꯗꯨꯗ ꯑꯌꯨꯛ ꯑꯉꯟꯕꯗ
ꯇꯜ ꯍꯧꯔꯤꯕꯅꯤ꯫ ꯂꯣꯏꯅ ꯁꯤꯖꯤꯟꯅꯔꯤꯕꯅꯤ꯫ ꯀꯗꯔꯁꯨ
ꯌꯥꯎꯗ꯭ꯔꯗꯤ ꯃꯥꯗꯤ ꯀꯗꯥꯏꯗꯒꯤ ꯁꯦꯟꯗꯣꯡ ꯐꯪꯂꯅꯤ꯫ ꯑꯌ
ꯨꯛ ꯋꯥꯀꯤꯡ ꯆꯠꯂꯨꯔꯒ ꯆꯥ ꯑꯃꯠꯇ ꯊꯛꯀꯦ ꯍꯥꯏꯅ
ꯍꯣꯇꯦꯜꯗ ꯉꯟꯈ꯭ꯔꯕ ꯑꯌꯨꯛꯇꯨꯗ ꯊꯣꯡ ꯍꯥꯡꯈꯤꯕꯗ
ꯉꯥꯏꯔꯤꯕ ꯍꯣꯇꯦꯜꯗꯨꯗ ꯆꯪꯂꯒ ꯆꯥ ꯑꯃꯠꯇ ꯊꯛꯀꯦ
ꯍꯥꯏꯔꯨꯕꯨ ꯉꯔꯥꯡꯒꯤ ꯆꯥꯗꯨ ꯌꯥꯏꯁꯤꯜꯂꯒ ꯃꯅꯤꯜ ꯋꯥ ꯋꯥ
ꯀꯥꯡꯈꯩ ꯨꯊꯣꯔꯛꯂꯤꯕꯅꯤ꯫ ꯑꯩꯅꯕꯨ ꯍꯥꯏ, ꯁꯤꯕꯨ ꯉꯔꯥꯡꯒꯤꯔꯣ,
ꯊꯣꯡ ꯍꯥꯡꯈꯤꯗ ꯉꯥꯏꯔꯤꯗ, ꯍꯥꯏꯔꯨꯕꯕꯨ ꯍꯣꯇꯦꯜ ꯃꯄꯨꯗꯨꯅ
ꯀꯥꯏꯗꯒꯤ ꯋꯥꯅꯣꯗ, ꯍꯧꯖꯤꯛꯇ ꯂꯣꯜꯂꯤꯅꯤ ꯊꯣꯛ ꯈꯨꯝ
ꯉꯝꯃꯤꯕꯅꯤꯗꯅ꯫ TSI ꯈꯪꯅꯕ ꯀꯗꯔꯗꯨ ꯑꯩꯈꯣꯏꯁꯨ ꯑꯗꯨꯝ
ꯌꯥꯗꯅ ꯊꯛꯑꯦꯗꯅ꯫ ꯅꯨꯡꯉꯥꯏꯈ꯭ꯔꯕ ꯀꯗꯔ ꯉꯥꯛꯇꯅꯤ
ꯍꯧꯖꯤꯛ ꯇꯧꯔꯤꯕꯁꯤ꯫ ꯃꯥꯅ ꯃꯥꯅ ꯊꯣꯛꯄ ꯃꯥꯅ ꯉꯝꯕ
ꯆꯥꯡꯗ ꯀꯗꯔ ꯇꯧꯅꯔꯤꯕꯅꯤ꯫

ꯍꯧꯖꯤꯛꯁꯤꯅ ꯑꯃꯨꯛ ꯀꯩꯗꯧꯔꯦ, ꯂꯝꯁꯤꯗ
ꯀꯗꯔꯁꯤ ꯃꯄꯥꯟ ꯁꯥꯕꯒ ꯆꯞ ꯃꯥꯟꯅꯔꯦ꯫ ꯏꯂꯦꯛꯁꯟ
ꯀꯌꯥ ꯌꯧꯔꯛꯄꯁꯤꯗ, ꯄꯥꯔꯇꯤ ꯈꯨꯗꯤꯡꯃꯛꯁꯨ ꯑꯗꯨ
ꯃꯉꯥꯏ, ꯏꯟꯇꯦꯟꯗꯤꯡ ꯀꯦꯟꯗꯤꯗꯦꯠꯁꯨ ꯑꯗꯨꯃꯉꯥꯏ,
ꯀꯦꯟꯗꯤꯗꯦꯠ ꯑꯣꯏꯔꯦ ꯍꯥꯏꯅ ꯀꯟꯐꯥꯝ ꯇꯧꯔꯕꯁꯤꯡꯁꯨ
ꯑꯗꯨ ꯃꯉꯥꯏ ꯋꯥꯁꯤ ꯇꯥꯕꯗ ꯑꯣꯟꯊꯣꯛꯅ ꯅꯨꯡꯉꯥꯏꯔꯕ
ꯃꯥꯂꯦꯝꯁꯤꯗ ꯃꯈꯣꯏꯃꯨꯛ ꯃꯃꯥ ꯂꯩꯕꯥꯛ ꯅꯨꯡꯁꯤꯕ, ꯃꯤꯌꯥꯝꯕꯨ
ꯅꯨꯡꯁꯤꯕ ꯑꯃꯠꯇ ꯂꯩꯇ꯭ꯔꯕꯗꯧꯅ ꯌꯥꯝꯅ ꯅꯨꯡꯁꯤ ꯅꯨꯡꯁꯤꯕ
ꯀꯗꯔ ꯃꯆꯥꯗꯒꯤꯅ ꯑꯑꯆꯧꯕ ꯐꯥꯎꯕꯒꯤ ꯋꯥꯁꯤ ꯉꯥꯡꯗꯨꯅ
ꯂꯩꯔꯤ꯫ ꯃꯤꯌꯥꯝꯁꯤꯡ ꯑꯁꯤꯅꯁꯨ ꯃꯈꯣꯏꯒꯤ ꯃꯇꯨꯡ
ꯀꯣꯏꯟꯏꯟꯅꯗꯨꯅ ꯂꯩꯔꯤ꯫ ꯚꯣꯠ ꯂꯦꯞꯅꯕ ꯊꯣꯛꯅꯔꯛꯂꯤꯕ
ꯃꯤꯌꯥꯝ ꯑꯁꯤꯒꯤ ꯐꯨꯜ ꯕꯥꯏꯑꯣ ꯗꯦꯇꯥꯗꯤ ꯀꯅꯥ ꯑꯃꯠꯇꯅ
ꯊꯤꯅꯗꯦ, ꯃꯈꯣꯏꯅꯁꯨ ꯃꯤꯌꯥꯝꯗ ꯐꯣꯡꯗꯣꯛꯇꯨꯅ ꯈꯪꯍꯟꯅꯕ
ꯍꯣꯠꯅꯕ ꯎꯗꯦ꯫ ꯆꯍꯤ ꯃꯉꯥꯒꯤ ꯃꯤꯌꯥꯝꯒꯤ ꯃꯤꯍꯨꯠ
ꯑꯣꯏꯒꯗꯧꯔꯤꯕ ꯑꯆꯧꯕ WA ꯄꯥꯏꯗꯧꯔꯤꯕ ꯃꯈꯣꯏꯒꯤ
ꯊꯕꯛ ꯈꯟꯕꯁꯤ ꯂꯨꯅ ꯂꯨꯅ ꯑꯔꯥꯏꯕ ꯇꯥꯗꯨꯅ ꯂꯥꯛꯂꯤ꯫

ꯏꯟꯇꯔꯚꯤꯌꯨꯒꯤ ꯇꯥꯏꯅꯤ ꯚꯣꯠ ꯊꯥꯗꯕ ꯍꯥꯏꯔꯤꯁꯤꯅ꯫

ꯏꯟꯇꯔꯚꯤꯌꯨꯒꯤ ꯕꯣꯔꯗ ꯃꯦꯝꯕꯔ ꯉꯥꯛꯇꯅꯤ
ꯚꯣꯇꯔꯁꯤꯡ ꯑꯁꯤꯅ, ꯑꯗꯨꯅ ꯃꯈꯣꯏꯅ ꯚꯣꯇꯔꯁꯤꯡꯗ
ꯀꯗꯔ ꯇꯧꯗꯨꯅ ꯊꯥꯖꯍꯟꯕ, ꯃꯈꯣꯏ ꯃꯈꯣꯏꯕꯨ ꯅꯨꯡꯁꯤꯕꯤꯅꯕ
ꯑꯔꯣꯏꯕꯤ ꯊꯥꯗꯨꯅ ꯀꯟꯅꯅ ꯍꯣꯠꯅꯔꯤ꯫ ꯑꯁꯨꯛ ꯆꯥꯎꯕ
ꯊꯕꯛ ꯍꯥꯏꯔꯁꯨ ꯌꯥꯕ WA ꯑꯃ ꯊꯤꯟꯗꯣꯛꯄꯁꯤꯗ
ꯀꯦꯟꯗꯤꯗꯦꯠ ꯑꯣꯏꯔꯤꯕꯁꯤꯡ ꯑꯁꯤꯒꯤ ꯍꯧꯈꯤꯕ
ꯄꯨꯟꯁꯤ, ꯃꯍꯩꯒꯤ ꯊꯥꯛ, ꯃꯈꯣꯏꯒꯤ ꯋꯥꯈꯜ, ꯃꯈꯣꯏꯒꯤ
ꯊꯕꯛ ꯇꯧꯈꯤꯕ, ꯇꯧꯔꯛꯀꯗꯕ ꯈꯪꯗꯣꯛꯅꯕ ꯀꯔꯤꯒꯤ
ꯕꯥꯏꯑꯣ ꯗꯦꯇꯥ ꯃꯤꯌꯥꯝꯗ ꯁꯕꯃꯤꯠ ꯇꯧꯍꯟꯗ꯭ꯔꯤꯕꯅꯣ,
ꯇꯧꯗ꯭ꯔꯤꯕꯅꯣ? ꯃꯈꯣꯏꯒꯤ ꯕꯥꯏꯑꯣ ꯗꯦꯇꯥ ꯑꯗꯨꯗ
ꯃꯈꯣꯏꯒꯤ ꯋꯥꯈꯜ ꯂꯣꯏꯅ ꯈꯪꯕ ꯉꯝꯕꯗꯤ ꯅꯠꯇꯦ, ꯑꯗꯨꯕꯨ
ꯆꯥꯎꯔꯥꯛꯄ ꯃꯈꯣꯏ ꯀꯃꯥꯏꯅ ꯍꯧꯔꯛꯏ꯫ ꯃꯈꯣꯏꯒꯤ
ꯄꯨꯟꯁꯤꯗ ꯃꯤꯌꯥꯝꯒꯒꯤ ꯑꯐꯕ ꯀꯔꯤ ꯀꯔꯤ ꯇꯧꯈ꯭ꯔꯕꯒꯦ
ꯍꯥꯏꯕ ꯑꯗꯣꯝꯗꯤ ꯃꯤꯌꯥꯝꯅꯁꯨ ꯀꯌꯥ ꯊꯧꯋꯥ ꯁꯥꯗꯕꯗꯧꯅ ꯇꯧꯕ
ꯎꯔꯤ꯫ ꯀꯦꯟꯗꯤꯗꯦꯠ ꯑꯃꯒꯤ ꯏꯁꯦꯟꯁꯤꯑꯦꯜ ꯑꯁꯤ
ꯁꯦꯜ ꯄꯥꯏꯕꯔꯣꯝꯗ ꯆꯠꯅꯔꯦ, ꯃꯁꯤꯃꯗꯤ ꯇꯁꯦꯡꯅ
ꯂꯥꯜꯂꯕꯅꯤ, ꯃꯥꯅ ꯄꯥꯏꯔꯛꯂꯤꯕ ꯁꯦꯜ ꯑꯗꯨ ꯀꯔꯝꯅꯅ
ꯄꯥꯏꯔꯛꯄꯅꯣ, ꯊꯤꯀꯥꯗꯒꯤꯅꯤ ꯍꯥꯏꯅ ꯂꯧꯔꯁꯤ, ꯊꯤꯀꯥ
ꯇꯧꯕꯗ ꯑꯗꯨꯛ ꯌꯥꯝꯕ ꯁꯦꯜ ꯀꯃꯥꯏꯅ ꯄꯥꯏꯒꯗꯧꯔꯤꯕꯅꯣ?

ꯀꯌꯥ ꯌꯥꯝꯅ ꯊꯃꯣꯏ ꯁꯦꯡꯅ ꯊꯕꯛ ꯁꯨꯈꯤꯕꯒꯦ ꯈꯪꯍꯟꯕ
ꯆꯨꯝꯃꯤ꯫ ꯁꯦꯜ ꯈꯔ ꯖꯣꯝ ꯖꯣꯝ ꯄꯥꯏꯕ ꯎꯕ, ꯂꯩꯀꯥꯏꯒꯤ
ꯀꯔꯤꯒꯤ ꯊꯕꯛ ꯇꯧꯕꯗ ꯁꯦꯜ ꯖꯣꯝ ꯖꯣꯝ ꯗꯣꯅꯦꯁꯟ ꯇꯧꯕ
ꯉꯝꯕ ꯉꯥꯛꯇꯗ ꯑꯐꯕꯅꯤ ꯍꯥꯏꯅ ꯈꯜꯂꯒꯗꯤ ꯃꯗꯨꯕꯨ
ꯆꯨꯝꯂꯤꯕꯔ ꯍꯥꯏꯕ ꯋꯥꯍꯪ ꯑꯃ ꯊꯣꯔꯛꯏ꯫ ꯂꯩꯕꯥꯛ ꯑꯃ
ꯈꯨꯟꯅꯥꯏ ꯑꯃ ꯆꯥꯎꯈꯠꯄ ꯍꯥꯏꯕꯁꯤ ꯗꯦꯃꯣꯀ꯭ꯔꯦꯁꯤ
ꯆꯠꯄ ꯂꯩꯕꯥꯛ ꯑꯁꯤꯗꯗꯤ ꯏꯂꯦꯛꯁꯟ ꯍꯥꯏꯕꯁꯤ ꯌꯥꯝꯅ
ꯃꯔꯨꯑꯣꯏꯕꯅꯤ꯫ ꯀꯅꯥꯕꯨ ꯑꯩꯈꯣꯏꯅ ꯑꯩꯈꯣꯏꯒꯤ ꯃꯤꯍꯨꯠ
ꯑꯣꯏꯠꯅ ꯈꯟꯒꯗꯒꯦ ꯍꯥꯏꯕ ꯑꯁꯤ ꯌꯥꯝꯅ ꯃꯨꯟꯅ ꯋꯥꯈꯜ
ꯈꯟꯕ ꯃꯊꯧ ꯇꯥꯕꯅꯤ꯫ ꯑꯗꯨꯕꯨ ꯍꯧꯖꯤꯛ ꯇꯧꯅꯔꯤꯕꯁꯤꯗꯤ,
ꯁꯦꯜ ꯄꯥꯏꯕ, ꯁꯦꯜ ꯄꯤꯕ ꯉꯝꯕꯕꯨ ꯑꯐꯕꯅꯤ ꯍꯥꯏꯅ ꯂꯧꯔꯒ
ꯃꯤꯈꯜꯗ ꯊꯥꯒꯠꯄ ꯑꯁꯤꯅ ꯇꯨꯡ ꯀꯣꯏꯕ ꯄꯨꯟꯁꯤꯔꯣꯜꯗ
ꯀꯌꯥꯃꯨꯛ ꯀꯥꯏꯔꯛꯄ ꯌꯥꯕꯒꯦ ꯍꯥꯏꯕ ꯑꯁꯤ ꯑꯩꯈꯣꯏꯅ
ꯃꯃꯨꯠ ꯇꯥꯅ ꯈꯟꯕ ꯆꯨꯝꯃꯤ꯫ ꯚꯣꯠ ꯂꯦꯞꯅꯔꯤꯕꯁꯤꯡꯅꯁꯨ
ꯃꯤꯌꯥꯝꯒꯤ ꯃꯤꯍꯨꯠ ꯑꯣꯏꯕ ꯍꯥꯏꯕꯁꯤ ꯕ꯭ꯌꯨꯖꯤꯅꯦꯁ ꯑꯃꯅꯤ
ꯍꯥꯏꯅ ꯈꯟꯗꯤ ꯈꯜꯂꯝꯃꯣꯏ, ꯃꯤ ꯈꯔꯅ ꯍꯥꯏꯅꯕꯗꯗꯤ
ꯃꯁꯤ ꯈ꯭ꯋꯥꯏꯗꯒꯤꯆꯥꯎꯕ ꯕ꯭ꯌꯨꯖꯤꯅꯦꯁ ꯑꯃꯅꯤ ꯍꯥꯏꯅ
ꯍꯥꯏꯅꯔꯤꯕꯁꯤ ꯂꯥꯜꯍꯟꯅꯕ ꯍꯣꯠꯅꯕ ꯆꯨꯝꯒꯅꯤ꯫

ꯑꯗꯨꯅꯗꯤ ꯚꯣꯠ ꯂꯦꯞꯂꯤꯕꯁꯤꯡꯁꯨ, ꯚꯣꯠ
ꯊꯥꯗꯕꯤꯒꯗꯕꯁꯤꯡꯁꯨ ꯀꯗꯔ ꯍꯥꯏꯕꯁꯤ ꯌꯥꯔꯤꯃꯈꯩ
ꯊꯥꯗꯣꯛꯅꯔꯒ ꯑꯁꯦꯡꯕ ꯅꯦꯁꯅꯦꯂꯤꯖꯝ ꯑꯃꯗꯤ
ꯁꯦꯀ꯭ꯔꯤꯐꯥꯏꯁꯀꯤ ꯁ꯭ꯄꯤꯔꯤꯠ ꯑꯗꯨ ꯂꯥꯛꯂꯒꯗꯤ ꯂꯩꯕꯥꯛ
ꯈꯨꯟꯅꯥꯏꯒꯤ ꯑꯐꯕ ꯑꯣꯏꯒꯅꯤ꯫ ꯚꯣꯇꯔꯅ ꯀꯗꯔ
ꯇꯧꯔꯒ ꯚꯣꯠ ꯂꯦꯞꯄꯁꯤꯡꯗꯒꯤ ꯁꯦꯜ ꯂꯧꯊꯣꯛꯄꯅꯤꯒꯅꯨ,
ꯀꯦꯟꯗꯤꯗꯦꯠꯅ ꯀꯗꯔ ꯇꯧꯔꯒ ꯚꯣꯇꯔꯗ ꯂꯣꯟꯅ
ꯁꯦꯜ ꯄꯤꯕꯤꯒꯅꯨ꯫ ꯀꯗꯔꯒꯤ ꯂꯝꯗꯝ ꯑꯃꯅꯤ
ꯍꯥꯏꯅꯔꯤꯕꯁꯤꯗꯒꯤ ꯁꯦꯡꯗꯣꯛꯄꯗ ꯄꯨꯝꯅꯃꯛꯀꯤ
ꯊꯧꯗꯥꯡ ꯆꯥꯎꯏ ꯍꯥꯏꯕꯁꯤ ꯅꯤꯡꯁꯤꯡꯅꯕ ꯃꯇꯝ ꯊꯤꯜꯂꯦ꯫

ꯆꯥꯏꯊꯣꯔꯛꯄ ꯋꯥꯈꯜ
ꯅꯔꯦꯟꯗ꯭ꯔ ꯅꯤꯉꯣꯝꯕ
10 = ꯏꯃꯗꯃ
(Amada Phun)
ꯄꯥꯠ ꯃꯥꯡꯈꯤꯕꯒꯤ ꯈꯨꯗꯣꯡꯊꯤꯕ
ꯋꯦꯠꯂꯦꯟꯁ ꯀꯟꯅꯅꯕ ꯈꯣꯡꯖꯪ ꯁꯧꯒꯠꯃꯤꯟꯅꯁꯤ
ꯋꯦꯠꯂꯦꯟꯁ ꯀꯟꯅꯅꯕ ꯈꯣꯡꯖꯪ ꯁꯧꯒꯠꯃꯤꯟꯅꯁꯤ ꯃꯤꯄꯨꯝ ꯈꯨꯗꯤꯡꯃꯛꯅ ꯍꯥꯏꯅꯕ ꯋꯥꯍꯩ ꯑꯃꯈꯛ ꯂꯩ ꯃꯗꯨꯗꯤ, ‘ꯏꯃꯥ ꯂꯩꯕꯥꯛꯇꯒꯤ ꯍꯦꯟꯕ ꯃꯥꯂꯦꯝꯒꯤ ꯃꯐꯝ ꯑꯃꯗ ꯂꯩꯇꯦ’

ꯍꯥꯏꯕꯁꯤꯅꯤ꯫ ꯋꯥꯐꯝ ꯑꯁꯤ ꯃꯁꯥ ꯃꯁꯥꯅ ꯂꯩꯖꯔꯤꯕ ꯃꯐꯝ ꯑꯗꯨꯕꯨ ꯁꯩꯊꯥꯖꯕ ꯏꯁꯩꯅꯤ ꯍꯥꯏꯅ
ꯂꯧꯔꯕꯁꯨ ꯀꯥꯏꯗꯦ꯫ ꯍꯦꯛ ꯄꯣꯛꯂꯛꯄꯗꯒꯖꯤ ꯁꯤꯕ ꯐꯥꯎꯕ ꯂꯩꯔꯤꯕ ꯃꯐꯝ ꯑꯗꯨꯒꯤ ꯑꯏꯪ
ꯑꯁꯥ, ꯅꯣꯡꯖꯨ ꯅꯨꯡꯁꯥꯒꯤ ꯐꯤꯚꯝ ꯍꯩꯅꯔꯛꯄꯅ ꯍꯥꯏꯕꯅꯤ ꯍꯥꯏꯔꯕꯁꯨ ꯊꯣꯏꯅ ꯀꯥꯏꯗꯦ꯫ ꯑꯗꯨꯕꯨ
ꯃꯥꯂꯦꯝꯒꯤ ꯃꯤꯄꯨꯝ ꯈꯨꯗꯤꯡꯃꯛꯅ ꯂꯥꯏꯒꯤ ꯂꯩꯕꯥꯛꯅꯤ ꯍꯥꯏꯅꯕ ꯃꯐꯝ ꯑꯃ ꯄꯟꯕ ꯇꯥꯔꯕꯗꯤ
ꯃꯅꯤꯄꯨꯔꯁꯨ ꯑꯃꯅꯤ ꯍꯥꯏꯕ ꯌꯥꯏ꯫ ꯆꯤꯡꯂꯣꯟ ꯃꯥꯄꯟꯅ ꯀꯣꯏꯁꯠꯟꯕ ꯇꯝꯄꯥꯛꯀꯤ ꯊꯦꯜ
ꯑꯃꯗ ꯀꯥꯡꯂꯨꯞ ꯀꯌꯥꯅ ꯅꯨꯡꯁꯤ ꯆꯥꯟꯅꯅ ꯏꯪꯅ ꯆꯤꯛꯅ ꯄꯥꯟꯃꯤꯟꯅꯕꯒꯤ ꯃꯊꯛꯇ \

ꯥꯝꯟꯁꯨ ꯁꯥꯗꯕ, ꯌꯥꯝꯅꯁꯨ ꯏꯪꯗꯕ ꯑꯃꯁꯨꯡ ꯅꯣꯡꯖꯨ ꯅꯨꯡꯁꯥꯒꯤ ꯆꯥꯡꯁꯨ ꯀꯥ ꯍꯦꯟꯗꯕ ꯑꯣꯏꯕꯅ
ꯃꯅꯤꯄꯨꯔ ꯂꯥꯏꯔꯩꯕꯥꯛꯀꯤ ꯂꯝꯗꯝꯅꯤ ꯍꯥꯏꯅꯔꯤꯕꯅꯤ꯫ ꯄꯨꯝꯅꯃꯛ ꯑꯁꯤꯒꯤ ꯃꯊꯛꯇ
ꯃꯐꯝꯁꯤꯗ ꯐꯪꯕ ꯃꯅꯥ ꯃꯁꯤꯡ, ꯌꯦꯜꯍꯧ ꯉꯥ ꯈꯨꯗꯤꯡꯃꯛ ꯃꯍꯥꯎ ꯂꯩꯕ ꯑꯣꯏꯕꯅ ꯑꯃꯨꯛꯄꯨ
ꯂꯥꯛꯇꯨꯅ ꯃꯐꯝꯁꯤꯗ ꯂꯩꯈ꯭ꯔꯕꯗꯤ ꯍꯟꯅꯤꯡꯕ ꯃꯐꯝ ꯅꯠꯇꯦ ꯍꯥꯏꯕ ꯌꯥꯏ꯫ ꯃꯐꯝ ꯑꯁꯤ
ꯀꯔꯤꯒꯤꯗꯃꯛ ꯑꯁꯨꯛ ꯌꯥꯝꯅ ꯅꯨꯡꯉꯥꯏꯔꯤꯕꯅꯣ ꯍꯥꯏꯕ ꯅꯩꯅꯕ ꯇꯥꯔꯕꯗꯤ ꯋꯦꯊꯂꯦꯟꯗ
ꯃꯔꯥꯡ ꯀꯥꯏꯅ ꯂꯩꯔꯝꯕꯅ ꯃꯍꯧꯁꯥꯒꯤ ꯏꯁꯤꯡ ꯅꯨꯡꯁꯤꯠꯀꯤ SM ꯃꯇꯝ ꯆꯨꯞꯄꯒꯤ
ꯑꯣꯏꯅ ꯀꯥꯏꯍꯟꯗꯅ ꯊꯝꯕꯅꯅꯤ꯫ ꯃꯅꯤꯄꯨꯔ ꯂꯩꯉꯥꯛꯀꯤ ꯏꯟꯚꯥꯏꯔꯣꯟꯃꯦꯟꯠ ꯑꯦꯟꯗ
ꯏꯀꯣꯂꯣꯖꯤ ꯋꯤꯡꯅ ꯐꯣꯡꯕ ꯔꯦꯀꯣꯔꯗꯀꯤ ꯃꯇꯨꯡꯏꯟꯅ ꯃꯃꯥꯡꯉꯩꯗ ꯃꯅꯤꯄꯨꯔꯗ ꯄꯥꯠ
500 ꯒꯤ ꯃꯊꯛꯇ ꯂꯩꯔꯝꯕꯤ ꯍꯥꯏꯅ ꯄꯥꯅꯔꯝꯃꯤ꯫ ꯑꯗꯨꯕꯨ ꯃꯇꯝꯒꯤ ꯈꯣꯡꯂꯩ ꯃꯇꯨꯡ ꯏꯟꯅ
ꯄꯥꯠꯁꯤꯡ ꯑꯁꯤ ꯃꯊꯪ ꯃꯊꯪ ꯃꯥꯡꯁꯤꯜꯂꯛꯈꯤꯕꯗꯒꯤ ꯀꯥꯏꯅꯊꯪꯗ ꯄꯥꯠ 134 ꯔꯣꯝꯇꯃꯛ
ꯍꯤꯡꯂꯤ ꯍꯥꯏꯅ ꯂꯧꯅꯔꯝꯃꯤ꯫ ꯃꯁꯤꯒꯤ ꯃꯇꯨꯡ ꯀꯨꯝꯖꯥ 1950 ꯑꯗꯨꯋꯥꯏꯗꯗꯤ ꯁꯨꯞꯅꯇꯒꯤ
ꯄꯥꯠ 55 ꯈꯛꯇꯃꯛ ꯑꯍꯤꯡꯕ ꯑꯣꯏꯔꯤ ꯍꯥꯏꯅ ꯔꯦꯀꯣꯔꯗ ꯇꯧꯕ ꯉꯝꯈꯤ ꯍꯥꯏꯔꯤ꯫

ꯌꯨꯝ ꯑꯌꯥꯝꯕꯒꯖꯤ ꯄꯨꯈ꯭ꯔꯤ ꯑꯃ, ꯈꯣꯡꯕꯥꯟ ꯑꯃ, ꯉꯥ ꯆꯥꯅꯅꯕ ꯀꯣꯝ ꯑꯃ ꯂꯩꯅꯔꯝꯕꯗꯨ
ꯍꯧꯖꯤꯛꯇꯤ ꯄꯨꯈ꯭ꯔꯤꯁꯨ, ꯈꯣꯡꯕꯥꯟꯁꯨ, ꯀꯣꯝꯁꯨ ꯑꯌꯥꯝꯕꯅ ꯃꯥꯡꯈ꯭ꯔꯦ꯫ ꯃꯁꯤꯒꯤꯁꯨ ꯃꯊꯛꯇ
ꯑꯍꯤꯡꯕ ꯄꯥꯠ 55 ꯂꯩꯔꯝꯃꯤ ꯍꯥꯏꯕꯗꯨꯁꯨ ꯍꯧꯖꯤꯛꯇꯤ ꯁꯨꯞꯅꯇꯒꯤ 17/18 ꯔꯣꯝꯇꯃꯛ
ꯉꯥꯏꯁꯤꯜꯂꯛꯂꯦ꯫ ꯍꯤꯡꯍꯧꯔꯤꯕ ꯄꯥꯠꯁꯤꯡꯒꯖꯤ ꯃꯅꯨꯡꯗ ꯄꯨꯝꯂꯦꯟ/ ꯈꯣꯏꯗꯨꯝ/ ꯂꯝꯖꯥꯎ
ꯄꯥꯠ, ꯏꯀꯣꯞ / ꯈꯔꯨꯡ ꯄꯥꯠ, ꯂꯧꯁꯤ ꯄꯥꯠ, ꯋꯥꯏꯊꯧ/ ꯄꯨꯅꯦꯝ ꯄꯥꯠ, ꯑꯑꯣꯡꯕꯤꯈꯣꯡ ꯄꯥꯠ,
ꯎꯁꯣꯏꯄꯣꯛꯄꯤ ꯄꯥꯠ, ꯁꯅꯥ ꯄꯥꯠ, ꯎꯇ꯭ꯔ ꯄꯥꯠ, ꯂꯣꯛꯇꯥꯛ ꯄꯥꯠ, ꯇꯥꯟꯈꯥ ꯄꯥꯠ, ꯀꯔꯥꯝ ꯄꯥꯠ,
ꯂꯝꯐꯦꯜ ꯄꯥꯠ, ꯖꯩꯂꯥꯠ ꯄꯥꯠ, ꯖꯥꯏꯃꯦꯡ ꯂꯦꯛ, ꯌꯥꯔꯜ ꯄꯥꯠ, ꯍꯩꯉꯥꯡ ꯄꯥꯠ, ꯀꯌꯥꯡ ꯀꯆꯧꯄꯨꯡ
ꯄꯥꯠ, ꯏꯝꯐꯥꯜ ꯏꯁꯠꯀꯤ ꯑꯟꯗ꯭ꯔꯣꯗ ꯂꯩꯕ ꯁꯅꯥ ꯄꯥꯠꯅꯆꯤꯡꯕꯅꯤ꯫ ꯍꯥꯏꯔꯤꯕ ꯄꯥꯠꯁꯤꯡ
ꯑꯁꯤꯁꯨ ꯄꯥꯠ ꯑꯃꯒꯤ ꯂꯩꯐꯝ ꯊꯣꯛꯄ ꯃꯆꯠ ꯁꯨꯅ ꯂꯩꯇꯕ ꯀꯌꯥꯃꯔꯨꯝ ꯌꯥꯎꯔꯦ꯫ ꯏꯝꯐꯥꯜ
ꯁꯍꯔꯒꯤ ꯑꯏꯪ ꯑꯁꯥꯒꯤ SM ꯉꯥꯛꯇꯨꯅ ꯊꯝꯕꯗ ꯑꯆꯧꯕ ꯊꯧꯗꯥꯡ ꯂꯧꯔꯝꯕ ꯂꯝꯐꯦꯜ ꯄꯥꯠ
ꯍꯧꯖꯤꯛꯇꯤ ꯂꯩꯈꯤꯗ꯭ꯔꯦ꯫ ꯃꯤꯑꯣꯏꯕꯒꯤ ꯆꯥꯎꯈꯠ ꯊꯧꯔꯥꯡꯒꯤ ꯊꯕꯛꯁꯤꯡ ꯄꯥꯏꯈꯠꯂꯛꯄꯅ
ꯌꯦꯛꯅꯕ ꯑꯣꯏꯔꯛꯈꯤꯕꯗꯒꯤ ꯄꯥꯠ ꯑꯁꯤ ꯁꯤꯔꯛꯈꯤꯕꯅꯤ꯫ ꯄꯥꯠ ꯑꯁꯤꯒꯖꯤ ꯀꯅꯥꯅꯁꯨ
ꯈꯪꯗꯕꯅ ꯅꯣꯡꯃ ꯅꯣꯡꯃꯒꯇꯤ ꯊꯦꯟꯒꯠꯂꯛꯈꯤꯕꯁꯤꯡ ꯁꯦꯡꯗꯣꯛꯅꯕꯒꯤ ꯊꯧꯔꯥꯡ ꯑꯃꯐꯥꯎꯕ
ꯇꯧꯍꯧꯗꯕꯅ ꯇꯦꯜꯂꯕ ꯃꯇꯝ ꯈꯔꯒꯤ ꯃꯅꯨꯡꯗ ꯄꯥꯠ ꯑꯁꯤꯒꯤ ꯈꯣꯡꯅꯨꯡ ꯀꯥ ꯍꯦꯟꯅ
ꯊꯦꯟꯒꯠꯂꯛꯈꯤ꯫ ꯃꯇꯧ ꯑꯁꯨꯝꯅ ꯏꯝꯐꯥꯜ ꯁꯍꯔꯒꯖꯤ ꯃꯅꯨꯡꯗ ꯂꯩꯔꯝꯕ ꯄꯣꯔꯣꯝꯄꯥꯠ,
ꯀꯩꯁꯥꯝꯄꯥꯠ, ꯀꯦꯀ꯭ꯔꯨꯄꯥꯠꯅꯆꯤꯡꯕ ꯃꯐꯝꯁꯤꯡꯗ ꯏꯁꯤꯡ ꯈꯖꯤꯛꯇꯪ ꯐꯥꯎꯕ ꯂꯩꯕ ꯄꯥꯠ ꯃꯆꯥ
ꯑꯃ ꯁꯦꯝꯒꯠꯅꯅꯕ ꯂꯩꯉꯥꯛꯅ ꯊꯧꯔꯥꯡ ꯇꯧꯍꯧꯈꯤꯗꯦ꯫ ꯃꯁꯤꯅ ꯃꯔꯝ ꯑꯣꯏꯔꯒ ꯏꯝꯐꯥꯜ
ꯁꯍꯔꯒꯖꯤ ꯃꯍꯧꯁꯥꯒꯤ ꯈꯜꯗ ꯁꯥꯊꯤꯅ ꯀꯥꯏꯔꯛꯇꯨꯅ ꯅꯣꯡꯖꯨ ꯅꯨꯡꯁꯥꯒꯖꯤ ꯐꯤꯚꯝ ꯅꯣꯡꯗꯝ
ꯅꯥꯏꯔꯛꯇ꯭ꯔꯦ꯫ ꯑꯏꯪ ꯑꯁꯥꯒꯖꯤ ꯈꯜꯁꯨ ꯀꯥꯏꯔꯊꯔꯛꯀꯂꯦ꯫ ꯆꯍꯤ ꯈꯔꯒꯤ ꯇꯨꯡꯗ ꯃꯤꯌ
ꯥꯝꯅ ꯂꯥꯏꯔꯩꯕꯥꯛꯅꯤ ꯍꯥꯏꯅꯔꯤꯕ ꯃꯅꯤꯄꯨꯔ ꯃꯤ ꯂꯩꯕ ꯌꯥꯗꯕ ꯃꯐꯝ ꯑꯃ ꯑꯣꯏꯔꯛꯄꯁꯨ ꯌꯥꯔꯤ꯫

ꯃꯇꯥꯡ ꯑꯁꯤꯗ ꯄꯟꯖꯅꯤꯡꯕ ꯋꯥꯐꯝꯗꯤ ꯆꯍꯤ ꯑꯁꯤꯒꯤ ꯐꯦꯕ꯭ꯔꯨꯋꯥꯔꯤ 2 ꯗ ꯃꯅꯤꯄꯨꯔꯒꯤ
ꯃꯐꯝ ꯑꯌꯥꯝꯕꯗ ꯋꯦꯊꯂꯦꯟꯗꯁꯤꯡ ꯀꯟꯅꯅꯕ ꯏꯟꯚꯥꯏꯔꯣꯟꯃꯦꯟꯠꯇꯦꯂꯤꯁꯠꯁꯤꯡꯅ
ꯊꯧꯔꯝ ꯀꯌꯥ ꯁꯤꯜꯂꯤ꯫ ꯊꯧꯔꯝꯁꯤꯡ ꯑꯁꯤ ꯃꯤꯄꯨꯝ ꯇꯤꯡꯅ ꯁꯔꯨꯛ ꯌꯥꯔꯒ ꯋꯦꯊꯂꯦꯟꯗꯁꯤꯡ
ꯃꯥꯡꯁꯤꯜꯂꯛꯄꯗꯒꯤ ꯀꯟꯅꯕ ꯃꯤꯌꯥꯝꯅ ꯀꯔꯤ ꯊꯧꯗꯥꯡ ꯂꯧꯕ ꯌꯥꯕꯒꯦ ꯍꯥꯏꯕꯗꯨ ꯈꯪꯃꯤꯟꯅꯕ
ꯀꯥꯟꯅꯒꯅꯤ꯫ ꯏꯟꯚꯥꯏꯔꯣꯟꯃꯦꯟꯠꯇꯦꯂꯤꯁꯠꯁꯤꯡꯅ ꯇꯨꯡꯒꯤ ꯑꯐꯕ ꯃꯅꯤꯄꯨꯔ
ꯑꯃꯒꯤꯗꯃꯛ ꯋꯦꯠꯂꯦꯟꯗꯁꯤꯡꯤ ꯀꯟꯅꯕ ꯆꯪꯁꯤꯜꯂꯛꯄ ꯈꯣꯡꯖꯪꯁꯤꯡꯗ ꯃꯤꯌꯥꯝꯅ ꯁꯔꯨꯛ
ꯌꯥꯗꯨꯅ ꯃꯇꯝ ꯆꯨꯞꯄꯒꯤ ꯑꯣꯏꯅ ꯃꯅꯤꯄꯨꯔ ꯂꯥꯏꯔꯩꯕꯥꯛꯅꯤ ꯍꯥꯏꯍꯟꯅꯕ ꯍꯣꯠꯅꯃꯤꯟꯅꯁꯤ꯫

ꯕꯦꯛꯇꯔꯤꯑꯦꯜ ꯑꯦꯟꯖꯥꯏꯝꯒꯤ ꯁ꯭ꯇ꯭ꯔꯛꯆꯔ ꯄꯨꯊꯣꯛꯇꯨꯅ ꯃꯍꯧꯁꯥꯗ ꯇꯨꯝꯕ ꯄ꯭ꯂꯥꯁꯇꯤꯛ ꯁꯨꯡꯕ
ꯁꯥꯏꯟꯁꯀꯤ ꯈꯣꯡꯆꯠ
ꯀꯨꯟꯖꯣ ꯅꯥꯎꯔꯦꯝ
ꯃꯍꯧꯁꯥꯗ ꯇꯨꯝꯕ ꯄꯣꯂꯤꯂꯦꯛꯇꯤꯛ ꯑꯦꯁꯤꯗꯅ ꯁꯥꯕ ꯄꯣꯠꯁꯤꯡꯍꯥꯏꯗ꯭ꯔꯣꯛꯁꯤꯑꯦꯜꯀꯥꯏꯟ-ꯀꯣꯑꯦꯟꯖꯥꯏꯝ ꯑꯦꯒꯤ ꯆꯪꯂꯛꯐꯝ ꯑꯃꯁꯨꯡ ꯁꯨꯡꯂꯕ ꯄꯣꯂꯤꯃꯔꯒꯤ ꯊꯣꯔꯛꯐꯝ ꯇꯥꯛꯄ