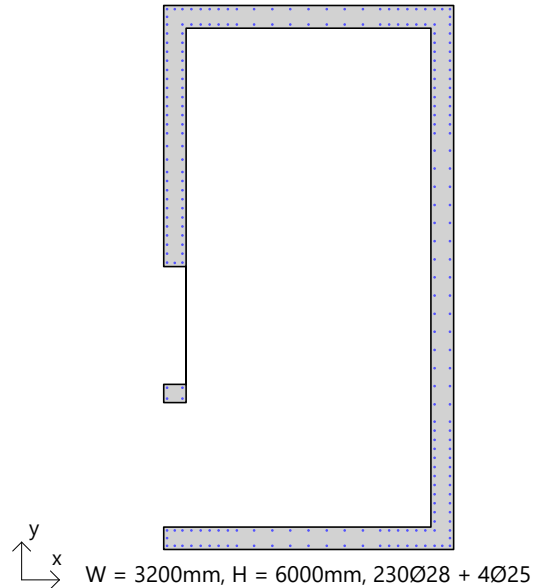


Tên cột: LT03\_T5-9

Tiêu chuẩn thiết kế: EN 1992-1-1



### I. THÔNG SỐ ĐẦU VÀO:

Tiết diện đa giác:  $w_x = 3200.0$  mm,  $w_y = 6000.0$  mm

$A_{sl} = 143586.46$  mm<sup>2</sup>,  $\rho = 3.89$  %

#### Nội lực thiết kế:

$N = 60829.40$  kN

$M_{0x\_top} = 5261.77$  kNm,  $M_{0x\_bot} = -8250.45$  kNm

$M_{0y\_top} = -12471.50$  kNm,  $M_{0y\_bot} = -7566.58$  kNm

#### 1. Mô-men do imperfection:

$e_{0x\_imperf} = \theta_i * L_{0x} / 2 = 0.0050 * L_{0x} / 2 = 18.75$  mm

$M_{imperx} = |N| * e_{0x} / 1000 = 1140.55$  kNm

$e_{0y\_imperf} = \theta_i * L_{0y} / 2 = 0.0050 * L_{0y} / 2 = 18.75$  mm

$M_{impery} = |N| * e_{0y} / 1000 = 1140.55$  kNm

#### 2. Mô-men trung gian:

$M_{0x1} = \min\{|M_{0x\_top}|, |M_{0x\_bot}|\} + M_{imperx} = 6402.32$  kNm

$M_{0x2} = \max\{|M_{0x\_top}|, |M_{0x\_bot}|\} + M_{imperx} = -9391.00$  kNm

$M_{0y1} = \min\{|M_{0y\_top}|, |M_{0y\_bot}|\} + M_{impery} = -8707.13$  kNm

$M_{0y2} = \max\{|M_{0y\_top}|, |M_{0y\_bot}|\} + M_{impery} = -13612.05$  kNm

#### 3. Kiểm tra độ mảnh cột:

$w = A_s * f_{yd} / (A_c * f_{cd}) = 0.6604$

$A = 0.70$  (mặc định Eurocode)

$B = \sqrt{1 + 2w} = 1.5234$

$I_x = 3.76e+13$  mm<sup>4</sup>,  $I_y = 2.49e+13$  mm<sup>4</sup>

$r_x = 3190.80$  mm,  $r_y = 2597.95$  mm

$n = N_{Ed} / (A_c * f_{cd}) = 0.6435$

#### Mô-men theo trục X:

$r_{mx} = M_{0x1} / M_{0x2} = -0.7$

$C_x = 1.7 - r_{mx}$  ( $C_x = 0.7$  if unbraced),  $C_x = 2.4$

$\lambda_{limX} = 20.0 * A * B * C_x / \sqrt{n} = 63.32$

$\lambda_x = L_{0x} / r_x = 7500.00 / 3190.80 = 2.35$  ( $\lambda_{lim,x} = 63.32$ )

#### Mô-men theo trục Y:

$r_{my} = M_{0y1} / M_{0y2} = 0.6$

$C_y = 1.7 - r_{my}$  ( $C_y = 0.7$  if unbraced),  $C_y = 1.1$

$\lambda_{limY} = 20.0 * A * B * C_y / \sqrt{n} = 28.19$

$\lambda_y = L_{0y} / r_y = 7500.00 / 2597.95 = 2.89$  ( $\lambda_{lim,y} = 28.19$ )

isSlenderX = NO, isSlenderY = NO

### II. KIỂM TRA KHẢ NĂNG CHỊU UỐN DỤC

#### 1. Mô-men bậc hai (second-order moment):

$n = N_{Ed} / (A_c * f_{cd}) = 0.6435$

$\nu_u = 1 + w = 1.6604$

$n_{bal} = 0.40$  (giả định Eurocode)

$K_{rx} = K_{ry} = \text{MIN}((n_u - n) / (n_u - n_{bal}), 1.0) = 0.8068$

$\varphi_{ef} = 1.80$

#### Mô-men theo trục X:

$\beta_{ex} = 0.35 + f_{ck} / 200 - \lambda_{mdax} / 150 = 0.53$

$K_{fx} = \text{MAX}(1.0, 1.0 + \beta_{ex} * \varphi_{ef}) = 1.96$

$\text{curvature}_{ex} = K_{rx} * K_{fx} * e_{yd} / (0.45 * d_h) = 0.8068 * 1.9618 * 0.0022 / (0.45 * 457.000) = 0.0000167$

$e_{2x} = \text{curvature}_{ex} * L_{0x}^2 / 10 = 94.12 \text{ mm}$

$M_{slenderx} = |N| * e_{2x} * \cos \delta = 0.00 \text{ kNm}$

#### Mô-men theo trục Y:

$\beta_{ey} = 0.35 + f_{ck} / 200 - \lambda_{mday} / 150 = 0.53$

$K_{fy} = \text{MAX}(1.0, 1.0 + \beta_{ey} * \varphi_{ef}) = 1.96$

$\text{curvature}_{ey} = K_{ry} * K_{fy} * e_{yd} / (0.45 * d_b) = 0.8068 * 1.9554 * 0.0022 / (0.45 * 257.000) = 0.0000297$

$e_{2y} = \text{curvature}_{ey} * L_{0y}^2 / 10 = 166.81 \text{ mm}$

$M_{slendery} = |N| * e_{2y} * \sin \delta = 0.00 \text{ kNm}$

## 2. Mô-men tổng hợp:

$\text{sameSignX} = \text{NO}, \text{sameSignY} = \text{YES}$

#### Mô-men theo trục X

$M_{0x\_equiv} = \text{max}(0.6 * M_{0x2} + 0.4 * M_{0x1}, 0.4 * M_{0x2}) = -3756.40 \text{ kNm}$

$e_{0x} = \text{MAX}(h / 30.0, 20.0) = 20.0 \text{ mm}$

$M_{Ne0x} = f_{abs}(N) * e_{0x} / 1000.0 = 1216.59 \text{ kNm}$

$M_{ttx\_Top} = M_{0x\_top} + M_{imperx} + M_{addx\_top} = 6402.32 \text{ kNm}$

$M_{ttx\_Mid} = M_{0x\_equiv} + M_{addx\_mid} = -3756.40 \text{ kNm}$

$M_{ttx\_Bot} = M_{0x\_bot} + M_{imperx} + M_{addx\_bot} = -9391.00 \text{ kNm}$

#### Mô-men theo trục Y

$M_{0y\_equiv} = \text{max}(0.6 * M_{0y2} + 0.4 * M_{0y1}, 0.4 * M_{0y2}) = -11650.08 \text{ kNm}$

$e_{0y} = \text{MAX}(b / 30.0, 20.0) = 20.0 \text{ mm}$

$M_{Ne0y} = f_{abs}(N) * e_{0y} / 1000.0 = 1216.59 \text{ kNm}$

$M_{tty\_Top} = M_{0y\_top} + M_{impery} + M_{addy\_top} = -13612.05 \text{ kNm}$

$M_{tty\_Mid} = M_{0y\_equiv} + M_{addy\_mid} = -11650.08 \text{ kNm}$

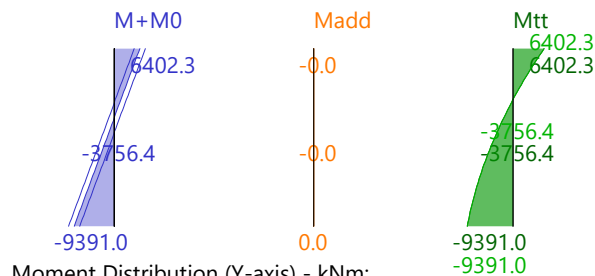
$M_{tty\_Bot} = M_{0y\_bot} + M_{impery} + M_{addy\_bot} = -8707.13 \text{ kNm}$

$M_{tt\_Top} = \text{sqrt}(M_{ttx\_Top}^2 + M_{tty\_Top}^2) = 15042.53 \text{ kNm}$  (Lấy theo dấu của mô men trục x)

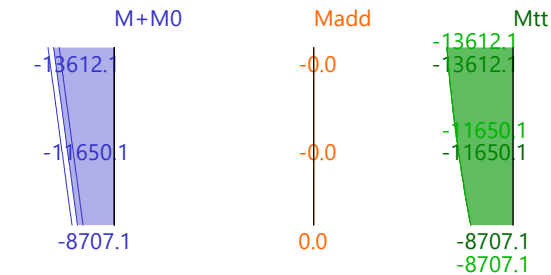
$M_{tt\_Mid} = \text{sqrt}(M_{ttx\_Mid}^2 + M_{tty\_Mid}^2) = -12240.71 \text{ kNm}$  (Lấy theo dấu của mô men trục x)

$M_{tt\_Bot} = \text{sqrt}(M_{ttx\_Bot}^2 + M_{tty\_Bot}^2) = -12806.45 \text{ kNm}$  (Lấy theo dấu của mô men trục x)

Moment Distribution (X-axis) - kNm:



Moment Distribution (Y-axis) - kNm:



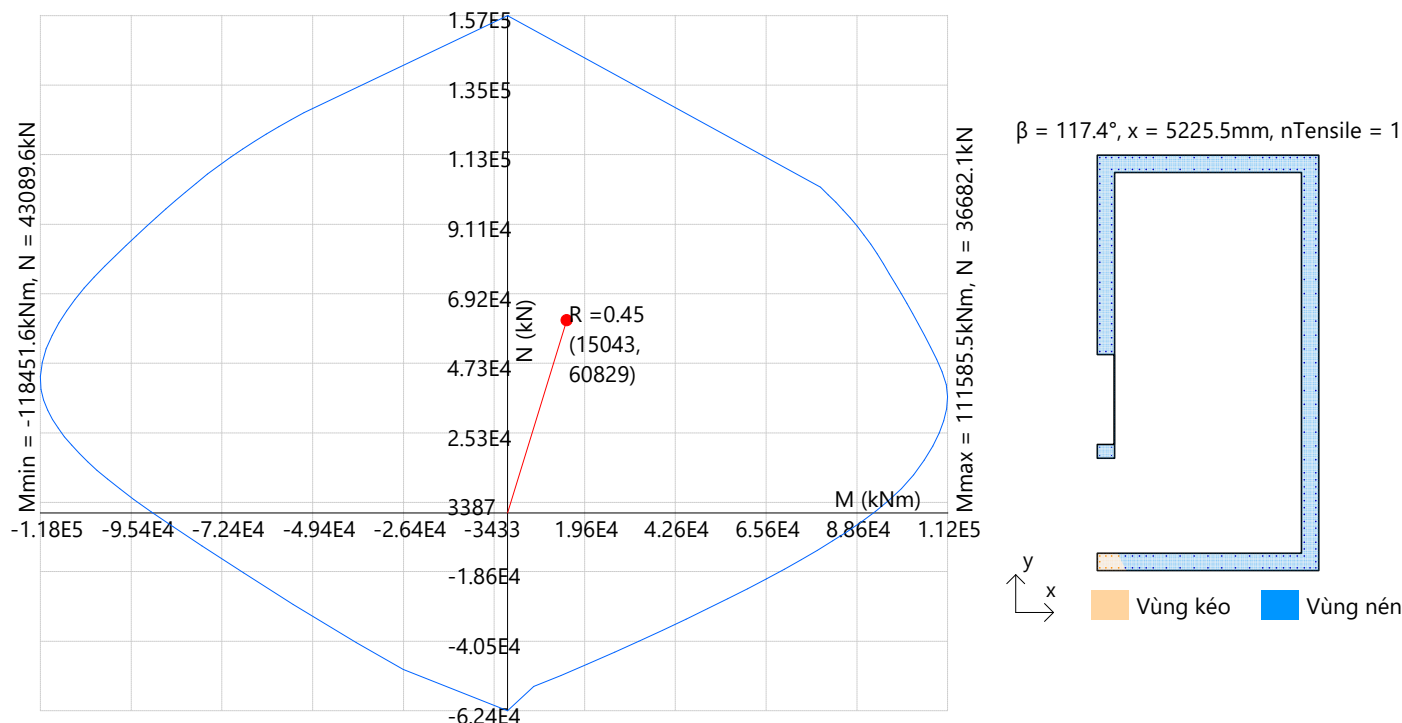
## 3. Kết quả kiểm tra của trường hợp tải trọng điển hình:

$N_{tt} = 60829.40 \text{ kN}$

$M_{tt} = 15042.53 \text{ kNm}$

$N_{max} = 134281.72 \text{ kN}, M_{max} = 33206.58 \text{ kNm}$

Tỷ số sử dụng tiết diện =  $\text{sqrt}(N_{tt}^2 + M_{tt}^2) / \text{sqrt}(N_{max}^2 + M_{max}^2) = 0.45$



Trạng thái kiểm tra:  
Cấu kiện đạt yêu cầu.

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#### 4. Bảng tổng hợp kết quả kiểm tra của toàn bộ trường hợp tải trọng:

| LC | Tổ hợp              | P [kN]   | MxT [kNm] | MyT [kNm] | MxB [kNm] | MyB [kNm] | Ratio | Kiểm tra |
|----|---------------------|----------|-----------|-----------|-----------|-----------|-------|----------|
| 1  | LT03a-06F-EC_ULS-1  | 50823.70 | 8795.18   | -5355.11  | -1710.58  | 2011.69   | 0.36  | OK       |
| 2  | LT03a-06F-EC_ULS-10 | 53120.30 | 5780.78   | -9367.99  | -5807.04  | -4104.17  | 0.39  | OK       |
| 3  | LT03a-06F-EC_ULS-11 | 58560.20 | 12726.40  | -6052.42  | 3187.95   | 2362.27   | 0.42  | OK       |
| 4  | LT03a-06F-EC_ULS-12 | 57094.80 | 12253.30  | -3748.75  | 866.84    | 6000.58   | 0.40  | OK       |
| 5  | LT03a-06F-EC_ULS-13 | 58385.40 | 8162.96   | -6260.54  | -6370.02  | 2299.85   | 0.41  | OK       |
| 6  | LT03a-06F-EC_ULS-14 | 59850.80 | 8636.06   | -8564.21  | -4048.91  | -1338.46  | 0.43  | OK       |
| 7  | LT03a-06F-EC_ULS-15 | 56323.70 | 13752.70  | -5742.63  | 6338.07   | 2287.27   | 0.41  | OK       |
| 8  | LT03a-06F-EC_ULS-16 | 53881.50 | 12964.20  | -1903.19  | 2469.57   | 8351.11   | 0.38  | OK       |
| 9  | LT03a-06F-EC_ULS-17 | 56032.40 | 6146.96   | -6089.51  | -9591.87  | 2183.23   | 0.39  | OK       |
| 10 | LT03a-06F-EC_ULS-18 | 58474.70 | 6935.44   | -9928.95  | -5723.36  | -3880.61  | 0.43  | OK       |
| 11 | LT03a-06F-EC_ULS-2  | 58472.80 | 10444.70  | -6156.48  | -1591.03  | 2331.06   | 0.41  | OK       |
| 12 | LT03a-06F-EC_ULS-3  | 37792.80 | 10317.80  | -3793.31  | 6697.87   | 1542.16   | 0.27  | OK       |
| 13 | LT03a-06F-EC_ULS-4  | 35350.60 | 9529.35   | 46.14     | 2829.37   | 7606.00   | 0.26  | OK       |
| 14 | LT03a-06F-EC_ULS-5  | 37501.60 | 2712.07   | -4140.18  | -9232.06  | 1438.12   | 0.26  | OK       |
| 15 | LT03a-06F-EC_ULS-6  | 39943.80 | 3500.55   | -7979.63  | -5363.56  | -4625.72  | 0.30  | OK       |
| 16 | LT03a-06F-EC_ULS-7  | 50969.30 | 12598.10  | -5181.67  | 6254.39   | 2063.71   | 0.37  | OK       |
| 17 | LT03a-06F-EC_ULS-8  | 48527.10 | 11809.60  | -1342.22  | 2385.89   | 8127.55   | 0.35  | OK       |
| 18 | LT03a-06F-EC_ULS-9  | 50678.10 | 4992.30   | -5528.54  | -9675.55  | 1959.66   | 0.35  | OK       |
| 19 | LT03a-06F-ULS1      | 57888.60 | 10273.10  | -6088.99  | -1649.20  | 2312.72   | 0.41  | OK       |
| 20 | LT03a-06F-ULS10     | 50530.60 | 14809.10  | -5024.88  | 11114.80  | 2067.80   | 0.37  | OK       |
| 21 | LT03a-06F-ULS11     | 50061.70 | 2563.85   | -5583.35  | -14532.40 | 1900.28   | 0.35  | OK       |
| 22 | LT03a-06F-ULS12     | 46598.60 | 13539.70  | 1156.62   | 4886.50   | 11830.60  | 0.35  | OK       |
| 23 | LT03a-06F-ULS13     | 53993.60 | 3833.32   | -11764.90 | -8304.11  | -7862.50  | 0.41  | OK       |
| 24 | LT03a-06F-ULS14     | 39199.30 | 12865.60  | -3826.35  | 11512.20  | 1626.05   | 0.29  | OK       |
| 25 | LT03a-06F-ULS15     | 38730.40 | 620.33    | -4384.82  | -14135.00 | 1458.54   | 0.28  | OK       |
| 26 | LT03a-06F-ULS16     | 35267.30 | 11596.20  | 2355.16   | 5283.86   | 11388.80  | 0.27  | OK       |
| 27 | LT03a-06F-ULS17     | 42662.30 | 1889.79   | -10566.30 | -7906.75  | -8304.24  | 0.33  | OK       |
| 28 | LT03a-06F-ULS18-Max | 35167.50 | 58591.90  | 5549.59   | 55976.50  | 11813.60  | 0.40  | OK       |
| 29 | LT03a-06F-ULS18-Min | 38772.80 | -44401.70 | -12625.40 | -56800.80 | -8216.70  | 0.38  | OK       |
| 30 | LT03a-06F-ULS19-Max | 33794.70 | 35108.70  | 12644.30  | 32408.80  | 19784.80  | 0.33  | OK       |
| 31 | LT03a-06F-ULS19-Min | 40145.60 | -20918.40 | -19720.20 | -33233.10 | -16187.90 | 0.35  | OK       |

|    |                     |          |           |           |           |           |      |    |
|----|---------------------|----------|-----------|-----------|-----------|-----------|------|----|
| 32 | LT03a-06F-ULS2      | 58099.60 | 15784.70  | -5837.62  | 9894.69   | 2388.12   | 0.42 | OK |
| 33 | LT03a-06F-ULS20-Max | 33029.80 | 58016.50  | 5742.18   | 55811.70  | 11701.00  | 0.38 | OK |
| 34 | LT03a-06F-ULS20-Min | 36635.20 | -44977.10 | -12432.80 | -56965.60 | -8329.29  | 0.36 | OK |
| 35 | LT03a-06F-ULS21-Max | 31657.10 | 34533.30  | 12836.90  | 32244.00  | 19672.30  | 0.32 | OK |
| 36 | LT03a-06F-ULS21-Min | 38008.00 | -21493.90 | -19527.60 | -33397.90 | -16300.50 | 0.34 | OK |
| 37 | LT03a-06F-ULS22     | 47057.10 | 8305.98   | -4967.98  | -1392.58  | 1855.96   | 0.33 | OK |
| 38 | LT03a-06F-ULS23     | 47118.20 | 9903.19   | -4895.14  | 1952.70   | 1877.81   | 0.34 | OK |
| 39 | LT03a-06F-ULS24     | 46995.90 | 6708.77   | -5040.82  | -4737.87  | 1834.11   | 0.33 | OK |
| 40 | LT03a-06F-ULS25     | 46092.50 | 9572.03   | -3282.57  | 327.93    | 4424.63   | 0.33 | OK |
| 41 | LT03a-06F-ULS26     | 48021.60 | 7039.93   | -6653.39  | -3113.10  | -712.70   | 0.34 | OK |
| 42 | LT03a-06F-ULS27     | 45853.60 | 10693.40  | -4710.75  | 4172.08   | 1835.75   | 0.33 | OK |
| 43 | LT03a-06F-ULS28     | 45649.70 | 5369.40   | -4953.57  | -6978.88  | 1762.92   | 0.32 | OK |
| 44 | LT03a-06F-ULS29     | 44144.00 | 10141.50  | -2023.14  | 1464.13   | 6080.44   | 0.31 | OK |
| 45 | LT03a-06F-ULS3      | 57677.50 | 4761.44   | -6340.36  | -13193.10 | 2237.32   | 0.40 | OK |
| 46 | LT03a-06F-ULS30     | 47359.30 | 5921.34   | -7641.18  | -4270.92  | -2481.77  | 0.34 | OK |
| 47 | LT03a-06F-ULS4      | 54560.10 | 14642.00  | -272.99   | 4287.94   | 11176.60  | 0.40 | OK |
| 48 | LT03a-06F-ULS5      | 61217.10 | 5904.21   | -11905.00 | -7586.34  | -6551.20  | 0.45 | OK |
| 49 | LT03a-06F-ULS6      | 57366.30 | 16237.60  | -5731.53  | 11168.50  | 2363.72   | 0.42 | OK |
| 50 | LT03a-06F-ULS7      | 56897.40 | 3992.31   | -6290.00  | -14478.70 | 2196.20   | 0.40 | OK |
| 51 | LT03a-06F-ULS8      | 53434.30 | 14968.10  | 449.97    | 4940.17   | 12126.50  | 0.39 | OK |
| 52 | LT03a-06F-ULS9      | 60829.40 | 5261.77   | -12471.50 | -8250.45  | -7566.58  | 0.45 | OK |
| 53 | LT03a-07F-EC_ULS-1  | 49427.60 | 8763.82   | -5356.26  | -1210.57  | 1388.63   | 0.35 | OK |
| 54 | LT03a-07F-EC_ULS-10 | 51531.10 | 6288.56   | -8175.91  | -4798.20  | -3418.86  | 0.37 | OK |
| 55 | LT03a-07F-EC_ULS-11 | 56928.70 | 11597.40  | -6016.78  | 2353.80   | 1657.52   | 0.41 | OK |
| 56 | LT03a-07F-EC_ULS-12 | 55590.00 | 11841.50  | -4487.28  | 1081.40   | 4456.63   | 0.39 | OK |
| 57 | LT03a-07F-EC_ULS-13 | 56775.60 | 9115.29   | -6341.36  | -4496.16  | 1486.75   | 0.40 | OK |
| 58 | LT03a-07F-EC_ULS-14 | 58114.30 | 8871.21   | -7870.86  | -3223.75  | -1312.37  | 0.42 | OK |
| 59 | LT03a-07F-EC_ULS-15 | 54752.30 | 11947.10  | -5661.75  | 4595.30   | 1659.39   | 0.39 | OK |
| 60 | LT03a-07F-EC_ULS-16 | 52521.20 | 12353.90  | -3112.58  | 2474.63   | 6324.58   | 0.37 | OK |
| 61 | LT03a-07F-EC_ULS-17 | 54497.20 | 7810.13   | -6202.70  | -6821.29  | 1374.78   | 0.38 | OK |
| 62 | LT03a-07F-EC_ULS-18 | 56728.30 | 7403.34   | -8751.88  | -4700.63  | -3290.41  | 0.41 | OK |
| 63 | LT03a-07F-EC_ULS-2  | 56852.10 | 10356.40  | -6179.07  | -1071.18  | 1572.13   | 0.40 | OK |
| 64 | LT03a-07F-EC_ULS-3  | 36740.60 | 8560.19   | -3697.12  | 4811.58   | 1170.92   | 0.26 | OK |
| 65 | LT03a-07F-EC_ULS-4  | 34509.50 | 8966.98   | -1147.95  | 2690.91   | 5836.11   | 0.25 | OK |
| 66 | LT03a-07F-EC_ULS-5  | 36485.50 | 4423.25   | -4238.08  | -6605.02  | 886.31    | 0.26 | OK |
| 67 | LT03a-07F-EC_ULS-6  | 38716.60 | 4016.45   | -6787.25  | -4484.35  | -3778.88  | 0.28 | OK |
| 68 | LT03a-07F-EC_ULS-7  | 49555.20 | 10832.30  | -5085.78  | 4497.72   | 1530.94   | 0.35 | OK |
| 69 | LT03a-07F-EC_ULS-8  | 47324.10 | 11239.10  | -2536.61  | 2377.06   | 6196.13   | 0.34 | OK |
| 70 | LT03a-07F-EC_ULS-9  | 49300.00 | 6695.35   | -5626.74  | -6918.87  | 1246.33   | 0.35 | OK |
| 71 | LT03a-07F-ULS1      | 56292.50 | 10195.20  | -6114.66  | -1120.67  | 1556.40   | 0.40 | OK |
| 72 | LT03a-07F-ULS10     | 49127.70 | 11985.90  | -4869.79  | 7979.05   | 1595.06   | 0.35 | OK |
| 73 | LT03a-07F-ULS11     | 48716.90 | 5325.47   | -5740.73  | -10401.70 | 1136.83   | 0.34 | OK |
| 74 | LT03a-07F-ULS12     | 45535.60 | 12640.90  | -765.63   | 4564.78   | 9106.02   | 0.33 | OK |
| 75 | LT03a-07F-ULS13     | 52309.00 | 4670.54   | -9844.90  | -6987.39  | -6374.12  | 0.39 | OK |
| 76 | LT03a-07F-ULS14     | 38099.90 | 10049.20  | -3671.00  | 8262.25   | 1293.73   | 0.28 | OK |
| 77 | LT03a-07F-ULS15     | 37689.10 | 3388.69   | -4541.94  | -10118.50 | 835.51    | 0.27 | OK |
| 78 | LT03a-07F-ULS16     | 34507.80 | 10704.10  | 433.17    | 4847.98   | 8804.69   | 0.26 | OK |
| 79 | LT03a-07F-ULS17     | 41281.20 | 2733.75   | -8646.10  | -6704.19  | -6675.45  | 0.31 | OK |
| 80 | LT03a-07F-ULS18-Max | 34153.80 | 56918.30  | 4803.00   | 53255.20  | 10525.70  | 0.38 | OK |
| 81 | LT03a-07F-ULS18-Min | 37627.30 | -43002.30 | -11905.10 | -53593.20 | -7825.38  | 0.36 | OK |
| 82 | LT03a-07F-ULS19-Max | 32839.70 | 31917.80  | 10638.90  | 29054.90  | 17627.40  | 0.31 | OK |
| 83 | LT03a-07F-ULS19-Min | 38941.50 | -18001.80 | -17741.00 | -29392.90 | -14927.10 | 0.34 | OK |
| 84 | LT03a-07F-ULS2      | 56477.40 | 13193.10  | -5722.65  | 7152.56   | 1762.65   | 0.41 | OK |
| 85 | LT03a-07F-ULS20-Max | 32084.50 | 56370.20  | 5007.90   | 53095.30  | 10457.10  | 0.37 | OK |
| 86 | LT03a-07F-ULS20-Min | 35557.90 | -43550.40 | -11700.20 | -53753.10 | -7893.98  | 0.35 | OK |
| 87 | LT03a-07F-ULS21-Max | 30770.30 | 31369.70  | 10843.80  | 28895.00  | 17558.80  | 0.30 | OK |
| 88 | LT03a-07F-ULS21-Min | 36872.10 | -18549.90 | -17536.10 | -29552.80 | -14995.70 | 0.32 | OK |
| 89 | LT03a-07F-ULS22     | 45764.90 | 8247.98   | -4975.81  | -958.92   | 1262.11   | 0.33 | OK |
| 90 | LT03a-07F-ULS23     | 45818.50 | 9116.74   | -4862.21  | 1438.57   | 1321.88   | 0.33 | OK |
| 91 | LT03a-07F-ULS24     | 45711.40 | 7379.22   | -5089.41  | -3356.40  | 1202.34   | 0.32 | OK |
| 92 | LT03a-07F-ULS25     | 44881.40 | 9287.59   | -3791.55  | 547.89    | 3281.26   | 0.32 | OK |
| 93 | LT03a-07F-ULS26     | 46648.40 | 7208.37   | -6160.06  | -2465.72  | -757.04   | 0.33 | OK |
| 94 | LT03a-07F-ULS27     | 44586.10 | 9429.32   | -4646.89  | 3020.16   | 1328.25   | 0.32 | OK |

|     |                     |          |           |           |           |           |      |    |
|-----|---------------------|----------|-----------|-----------|-----------|-----------|------|----|
| 95  | LT03a-07F-ULS28     | 44407.50 | 6533.46   | -5025.56  | -4971.46  | 1129.02   | 0.31 | OK |
| 96  | LT03a-07F-ULS29     | 43024.30 | 9714.08   | -2862.47  | 1535.69   | 4593.88   | 0.31 | OK |
| 97  | LT03a-07F-ULS3      | 56107.60 | 7197.29   | -6506.68  | -9393.89  | 1350.15   | 0.40 | OK |
| 98  | LT03a-07F-ULS30     | 45969.20 | 6248.71   | -6809.98  | -3486.99  | -2136.61  | 0.33 | OK |
| 99  | LT03a-07F-ULS4      | 53243.70 | 13782.70  | -2028.05  | 4079.01   | 8524.07   | 0.38 | OK |
| 100 | LT03a-07F-ULS5      | 59341.20 | 6607.71   | -10201.30 | -6320.34  | -5411.26  | 0.43 | OK |
| 101 | LT03a-07F-ULS6      | 55763.30 | 13372.00  | -5598.52  | 8060.66   | 1766.53   | 0.40 | OK |
| 102 | LT03a-07F-ULS7      | 55352.50 | 6711.52   | -6469.46  | -10320.10 | 1308.31   | 0.39 | OK |
| 103 | LT03a-07F-ULS8      | 52171.20 | 14026.90  | -1494.36  | 4646.39   | 9277.49   | 0.37 | OK |
| 104 | LT03a-07F-ULS9      | 58944.60 | 6056.58   | -10573.60 | -6905.78  | -6202.65  | 0.43 | OK |
| 105 | LT03a-08F-EC_ULS-1  | 47954.60 | 8630.61   | -5296.84  | -931.02   | 1107.32   | 0.34 | OK |
| 106 | LT03a-08F-EC_ULS-10 | 49864.60 | 6645.04   | -7116.45  | -3960.47  | -2551.65  | 0.36 | OK |
| 107 | LT03a-08F-EC_ULS-11 | 55211.50 | 10528.90  | -5935.44  | 1584.25   | 1368.75   | 0.39 | OK |
| 108 | LT03a-08F-EC_ULS-12 | 53999.90 | 11346.50  | -5029.45  | 1020.76   | 3423.17   | 0.38 | OK |
| 109 | LT03a-08F-EC_ULS-13 | 55080.10 | 9781.53   | -6306.99  | -3178.05  | 1086.83   | 0.39 | OK |
| 110 | LT03a-08F-EC_ULS-14 | 56291.80 | 8963.85   | -7212.98  | -2614.57  | -967.60   | 0.40 | OK |
| 111 | LT03a-08F-EC_ULS-15 | 53097.90 | 10320.60  | -5564.28  | 3131.45   | 1426.58   | 0.38 | OK |
| 112 | LT03a-08F-EC_ULS-16 | 51078.50 | 11683.40  | -4054.29  | 2192.31   | 4850.62   | 0.36 | OK |
| 113 | LT03a-08F-EC_ULS-17 | 52879.00 | 9075.05   | -6183.52  | -4805.72  | 956.71    | 0.38 | OK |
| 114 | LT03a-08F-EC_ULS-18 | 54898.40 | 7712.25   | -7693.51  | -3866.58  | -2467.33  | 0.39 | OK |
| 115 | LT03a-08F-EC_ULS-2  | 55145.80 | 10155.20  | -6121.21  | -796.90   | 1227.79   | 0.39 | OK |
| 116 | LT03a-08F-EC_ULS-3  | 35631.40 | 7015.81   | -3613.97  | 3278.94   | 1055.17   | 0.25 | OK |
| 117 | LT03a-08F-EC_ULS-4  | 33612.00 | 8378.62   | -2103.98  | 2339.80   | 4479.21   | 0.24 | OK |
| 118 | LT03a-08F-EC_ULS-5  | 35412.50 | 5770.28   | -4233.20  | -4658.23  | 585.30    | 0.25 | OK |
| 119 | LT03a-08F-EC_ULS-6  | 37431.90 | 4407.47   | -5743.20  | -3719.09  | -2838.74  | 0.27 | OK |
| 120 | LT03a-08F-EC_ULS-7  | 48064.10 | 9253.38   | -4987.22  | 3037.56   | 1342.26   | 0.34 | OK |
| 121 | LT03a-08F-EC_ULS-8  | 46044.70 | 10616.20  | -3477.23  | 2098.42   | 4766.30   | 0.33 | OK |
| 122 | LT03a-08F-EC_ULS-9  | 47845.20 | 8007.84   | -5606.46  | -4899.61  | 872.39    | 0.34 | OK |
| 123 | LT03a-08F-ULS1      | 54610.30 | 10004.20  | -6059.89  | -840.41   | 1212.33   | 0.39 | OK |
| 124 | LT03a-08F-ULS10     | 47647.40 | 9526.93   | -4748.04  | 5454.92   | 1465.62   | 0.34 | OK |
| 125 | LT03a-08F-ULS11     | 47294.90 | 7521.61   | -5745.01  | -7323.93  | 709.13    | 0.34 | OK |
| 126 | LT03a-08F-ULS12     | 44396.10 | 11721.00  | -2316.96  | 3942.90   | 6978.32   | 0.32 | OK |
| 127 | LT03a-08F-ULS13     | 50546.10 | 5327.50   | -8176.10  | -5811.91  | -4803.58  | 0.37 | OK |
| 128 | LT03a-08F-ULS14     | 36941.50 | 7619.46   | -3562.43  | 5675.64   | 1227.19   | 0.26 | OK |
| 129 | LT03a-08F-ULS15     | 36589.00 | 5614.15   | -4559.40  | -7103.21  | 470.70    | 0.26 | OK |
| 130 | LT03a-08F-ULS16     | 33690.20 | 9813.57   | -1131.34  | 4163.62   | 6739.89   | 0.24 | OK |
| 131 | LT03a-08F-ULS17     | 39840.20 | 3420.03   | -6990.49  | -5591.19  | -5042.00  | 0.29 | OK |
| 132 | LT03a-08F-ULS18-Max | 33098.90 | 55787.70  | 4323.13   | 51441.40  | 9554.09   | 0.37 | OK |
| 133 | LT03a-08F-ULS18-Min | 36439.30 | -42254.00 | -11376.60 | -51566.30 | -7281.18  | 0.35 | OK |
| 134 | LT03a-08F-ULS19-Max | 31846.30 | 29568.80  | 9064.32   | 26039.30  | 15436.60  | 0.29 | OK |
| 135 | LT03a-08F-ULS19-Min | 37691.80 | -16035.20 | -16117.80 | -26164.10 | -13163.70 | 0.32 | OK |
| 136 | LT03a-08F-ULS2      | 54769.00 | 10906.80  | -5611.15  | 4911.40   | 1552.83   | 0.39 | OK |
| 137 | LT03a-08F-ULS20-Max | 31099.00 | 55269.70  | 4533.66   | 51292.90  | 9508.88   | 0.36 | OK |
| 138 | LT03a-08F-ULS20-Min | 34439.40 | -42772.00 | -11166.10 | -51714.80 | -7326.39  | 0.34 | OK |
| 139 | LT03a-08F-ULS21-Max | 29846.40 | 29050.80  | 9274.84   | 25890.70  | 15391.40  | 0.28 | OK |
| 140 | LT03a-08F-ULS21-Min | 35692.00 | -16553.10 | -15907.30 | -26312.60 | -13208.90 | 0.31 | OK |
| 141 | LT03a-08F-ULS22     | 44401.70 | 8098.80   | -4923.60  | -726.56   | 994.67    | 0.32 | OK |
| 142 | LT03a-08F-ULS23     | 44447.70 | 8360.36   | -4793.57  | 940.25    | 1093.35   | 0.32 | OK |
| 143 | LT03a-08F-ULS24     | 44355.70 | 7837.24   | -5053.64  | -2393.37  | 896.00    | 0.32 | OK |
| 144 | LT03a-08F-ULS25     | 43599.50 | 8932.74   | -4159.37  | 545.81    | 2531.44   | 0.31 | OK |
| 145 | LT03a-08F-ULS26     | 45203.90 | 7264.86   | -5687.84  | -1998.93  | -542.09   | 0.32 | OK |
| 146 | LT03a-08F-ULS27     | 43249.10 | 8278.09   | -4566.91  | 2034.14   | 1136.59   | 0.31 | OK |
| 147 | LT03a-08F-ULS28     | 43095.80 | 7406.21   | -5000.37  | -3521.88  | 807.68    | 0.31 | OK |
| 148 | LT03a-08F-ULS29     | 41835.50 | 9232.05   | -3509.91  | 1376.74   | 3533.42   | 0.30 | OK |
| 149 | LT03a-08F-ULS3      | 54451.60 | 9101.64   | -6508.63  | -6592.21  | 871.84    | 0.39 | OK |
| 150 | LT03a-08F-ULS30     | 44509.40 | 6452.25   | -6057.37  | -2864.48  | -1589.14  | 0.32 | OK |
| 151 | LT03a-08F-ULS4      | 51842.20 | 12882.00  | -3422.67  | 3550.27   | 6515.41   | 0.37 | OK |
| 152 | LT03a-08F-ULS5      | 57378.40 | 7126.49   | -8697.12  | -5231.08  | -4090.74  | 0.41 | OK |
| 153 | LT03a-08F-ULS6      | 54075.00 | 10859.40  | -5480.34  | 5539.64   | 1578.12   | 0.38 | OK |
| 154 | LT03a-08F-ULS7      | 53722.50 | 8854.08   | -6477.31  | -7239.21  | 821.64    | 0.38 | OK |
| 155 | LT03a-08F-ULS8      | 50823.80 | 13053.50  | -3049.25  | 4027.62   | 7090.83   | 0.36 | OK |
| 156 | LT03a-08F-ULS9      | 56973.70 | 6659.97   | -8908.40  | -5727.19  | -4691.07  | 0.41 | OK |
| 157 | LT03a-09F-EC_ULS-1  | 46414.50 | 8442.52   | -5187.98  | -737.48   | 886.62    | 0.33 | OK |

|     |                     |          |           |           |           |           |      |    |
|-----|---------------------|----------|-----------|-----------|-----------|-----------|------|----|
| 158 | LT03a-09F-EC_ULS-10 | 48134.30 | 6885.31   | -6193.23  | -3252.60  | -1798.58  | 0.34 | OK |
| 159 | LT03a-09F-EC_ULS-11 | 53419.60 | 9562.11   | -5815.52  | 880.43    | 1126.55   | 0.38 | OK |
| 160 | LT03a-09F-EC_ULS-12 | 52332.80 | 10833.80  | -5397.60  | 890.71    | 2574.82   | 0.37 | OK |
| 161 | LT03a-09F-EC_ULS-13 | 53309.70 | 10236.90  | -6185.98  | -2117.16  | 800.85    | 0.38 | OK |
| 162 | LT03a-09F-EC_ULS-14 | 54396.60 | 8965.17   | -6603.90  | -2127.44  | -647.41   | 0.39 | OK |
| 163 | LT03a-09F-EC_ULS-15 | 51371.20 | 8900.10   | -5448.20  | 1843.89   | 1212.00   | 0.36 | OK |
| 164 | LT03a-09F-EC_ULS-16 | 49559.80 | 11019.60  | -4751.66  | 1861.02   | 3625.78   | 0.35 | OK |
| 165 | LT03a-09F-EC_ULS-17 | 51188.00 | 10024.70  | -6065.64  | -3152.09  | 669.16    | 0.37 | OK |
| 166 | LT03a-09F-EC_ULS-18 | 52999.40 | 7905.19   | -6762.17  | -3169.22  | -1744.62  | 0.38 | OK |
| 167 | LT03a-09F-EC_ULS-2  | 53364.70 | 9899.50   | -6000.75  | -618.37   | 963.70    | 0.38 | OK |
| 168 | LT03a-09F-EC_ULS-3  | 34472.70 | 5691.41   | -3534.22  | 1951.71   | 928.17    | 0.24 | OK |
| 169 | LT03a-09F-EC_ULS-4  | 32661.30 | 7810.94   | -2837.69  | 1968.84   | 3341.96   | 0.23 | OK |
| 170 | LT03a-09F-EC_ULS-5  | 34289.50 | 6816.03   | -4151.67  | -3044.27  | 385.34    | 0.25 | OK |
| 171 | LT03a-09F-EC_ULS-6  | 36100.90 | 4696.51   | -4848.20  | -3061.40  | -2028.44  | 0.26 | OK |
| 172 | LT03a-09F-EC_ULS-7  | 46506.00 | 7880.21   | -4879.25  | 1760.51   | 1158.04   | 0.33 | OK |
| 173 | LT03a-09F-EC_ULS-8  | 44694.60 | 9999.74   | -4182.72  | 1777.64   | 3571.82   | 0.32 | OK |
| 174 | LT03a-09F-EC_ULS-9  | 46322.90 | 9004.84   | -5496.70  | -3235.47  | 615.20    | 0.33 | OK |
| 175 | LT03a-09F-ULS1      | 52852.90 | 9757.98   | -5942.50  | -656.03   | 948.44    | 0.38 | OK |
| 176 | LT03a-09F-ULS10     | 46099.80 | 7433.30   | -4641.86  | 3279.22   | 1305.68   | 0.32 | OK |
| 177 | LT03a-09F-ULS11     | 45804.90 | 9243.95   | -5635.95  | -4764.31  | 431.71    | 0.33 | OK |
| 178 | LT03a-09F-ULS12     | 43183.40 | 10845.70  | -3520.44  | 3306.79   | 5191.87   | 0.31 | OK |
| 179 | LT03a-09F-ULS13     | 48721.30 | 5831.51   | -6757.37  | -4791.89  | -3454.48  | 0.35 | OK |
| 180 | LT03a-09F-ULS14     | 35731.90 | 5567.28   | -3480.41  | 3456.36   | 1116.72   | 0.25 | OK |
| 181 | LT03a-09F-ULS15     | 35437.00 | 7377.92   | -4474.49  | -4587.16  | 242.76    | 0.26 | OK |
| 182 | LT03a-09F-ULS16     | 32815.50 | 8979.72   | -2358.99  | 3483.94   | 5002.91   | 0.24 | OK |
| 183 | LT03a-09F-ULS17     | 38353.40 | 3965.49   | -5595.91  | -4614.74  | -3643.43  | 0.27 | OK |
| 184 | LT03a-09F-ULS18-Max | 32005.70 | 54948.70  | 3952.18   | 50213.30  | 8857.62   | 0.37 | OK |
| 185 | LT03a-09F-ULS18-Min | 35214.50 | -41835.20 | -10891.70 | -50219.70 | -6938.97  | 0.34 | OK |
| 186 | LT03a-09F-ULS19-Max | 30815.80 | 28180.30  | 7965.05   | 23815.30  | 13651.60  | 0.28 | OK |
| 187 | LT03a-09F-ULS19-Min | 36404.40 | -15066.80 | -14904.60 | -23821.80 | -11732.90 | 0.31 | OK |
| 188 | LT03a-09F-ULS2      | 52985.60 | 8943.00   | -5495.06  | 2964.39   | 1341.82   | 0.37 | OK |
| 189 | LT03a-09F-ULS20-Max | 30076.50 | 54459.50  | 4163.72   | 50078.80  | 8829.25   | 0.35 | OK |
| 190 | LT03a-09F-ULS20-Min | 33285.20 | -42324.50 | -10680.20 | -50354.20 | -6967.33  | 0.33 | OK |
| 191 | LT03a-09F-ULS21-Max | 28886.60 | 27691.10  | 8176.59   | 23680.80  | 13623.20  | 0.26 | OK |
| 192 | LT03a-09F-ULS21-Min | 34475.10 | -15556.10 | -14693.10 | -23956.20 | -11761.30 | 0.29 | OK |
| 193 | LT03a-09F-ULS22     | 42976.40 | 7903.62   | -4823.68  | -571.17   | 787.27    | 0.31 | OK |
| 194 | LT03a-09F-ULS23     | 43014.80 | 7667.45   | -4694.02  | 477.98    | 901.26    | 0.31 | OK |
| 195 | LT03a-09F-ULS24     | 42937.90 | 8139.79   | -4953.34  | -1620.33  | 673.27    | 0.31 | OK |
| 196 | LT03a-09F-ULS25     | 42254.00 | 8557.65   | -4401.47  | 485.18    | 1915.05   | 0.30 | OK |
| 197 | LT03a-09F-ULS26     | 43698.70 | 7249.59   | -5245.89  | -1627.52  | -340.51   | 0.31 | OK |
| 198 | LT03a-09F-ULS27     | 41851.50 | 7263.56   | -4469.49  | 1161.28   | 962.30    | 0.30 | OK |
| 199 | LT03a-09F-ULS28     | 41723.40 | 8050.80   | -4901.70  | -2335.91  | 582.32    | 0.30 | OK |
| 200 | LT03a-09F-ULS29     | 40583.60 | 8747.23   | -3981.91  | 1173.27   | 2651.95   | 0.29 | OK |
| 201 | LT03a-09F-ULS3      | 52720.20 | 10573.00  | -6389.94  | -4276.45  | 555.07    | 0.38 | OK |
| 202 | LT03a-09F-ULS30     | 42991.30 | 6567.13   | -5389.27  | -2347.90  | -1107.33  | 0.31 | OK |
| 203 | LT03a-09F-ULS4      | 50360.30 | 12014.90  | -4485.55  | 2989.22   | 4840.19   | 0.36 | OK |
| 204 | LT03a-09F-ULS5      | 55345.50 | 7501.05   | -7399.45  | -4301.27  | -2943.31  | 0.39 | OK |
| 205 | LT03a-09F-ULS6      | 52312.50 | 8711.19   | -5365.36  | 3357.12   | 1377.48   | 0.37 | OK |
| 206 | LT03a-09F-ULS7      | 52017.70 | 10521.80  | -6359.45  | -4686.41  | 503.52    | 0.37 | OK |
| 207 | LT03a-09F-ULS8      | 49396.20 | 12123.60  | -4243.94  | 3384.69   | 5263.67   | 0.35 | OK |
| 208 | LT03a-09F-ULS9      | 54934.00 | 7109.40   | -7480.87  | -4713.99  | -3382.67  | 0.39 | OK |
| 209 | LT03a-10F-EC_ULS-1  | 44814.00 | 8219.24   | -5042.80  | -583.67   | 713.50    | 0.32 | OK |
| 210 | LT03a-10F-EC_ULS-10 | 46349.80 | 7034.47   | -5389.10  | -2641.78  | -1169.25  | 0.33 | OK |
| 211 | LT03a-10F-EC_ULS-11 | 51560.70 | 8700.68   | -5665.03  | 288.00    | 921.63    | 0.37 | OK |
| 212 | LT03a-10F-EC_ULS-12 | 50594.80 | 10321.10  | -5627.64  | 756.75    | 1889.70   | 0.36 | OK |
| 213 | LT03a-10F-EC_ULS-13 | 51471.80 | 10519.90  | -6005.81  | -1244.22  | 598.48    | 0.37 | OK |
| 214 | LT03a-10F-EC_ULS-14 | 52437.80 | 8899.42   | -6043.20  | -1712.98  | -369.59   | 0.37 | OK |
| 215 | LT03a-10F-EC_ULS-15 | 49579.70 | 7676.96   | -5313.65  | 767.07    | 1015.38   | 0.35 | OK |
| 216 | LT03a-10F-EC_ULS-16 | 47969.70 | 10377.70  | -5251.34  | 1548.33   | 2628.84   | 0.34 | OK |
| 217 | LT03a-10F-EC_ULS-17 | 49431.50 | 10709.00  | -5881.63  | -1786.63  | 476.80    | 0.36 | OK |
| 218 | LT03a-10F-EC_ULS-18 | 51041.40 | 8008.20   | -5943.93  | -2567.89  | -1136.66  | 0.36 | OK |
| 219 | LT03a-10F-EC_ULS-2  | 51516.30 | 9610.28   | -5835.42  | -478.11   | 760.05    | 0.37 | OK |
| 220 | LT03a-10F-EC_ULS-3  | 33269.60 | 4572.32   | -3451.42  | 844.51    | 797.81    | 0.23 | OK |

|     |                     |          |           |           |           |           |      |    |
|-----|---------------------|----------|-----------|-----------|-----------|-----------|------|----|
| 221 | LT03a-10F-EC_ULS-4  | 31659.70 | 7273.09   | -3389.11  | 1625.76   | 2411.27   | 0.23 | OK |
| 222 | LT03a-10F-EC_ULS-5  | 33121.50 | 7604.33   | -4019.40  | -1709.20  | 259.23    | 0.24 | OK |
| 223 | LT03a-10F-EC_ULS-6  | 34731.40 | 4903.55   | -4081.71  | -2490.46  | -1354.23  | 0.25 | OK |
| 224 | LT03a-10F-EC_ULS-7  | 44888.10 | 6703.23   | -4758.81  | 693.18    | 982.79    | 0.32 | OK |
| 225 | LT03a-10F-EC_ULS-8  | 43278.10 | 9404.00   | -4696.50  | 1474.44   | 2596.25   | 0.31 | OK |
| 226 | LT03a-10F-EC_ULS-9  | 44739.90 | 9735.24   | -5326.79  | -1860.52  | 444.21    | 0.32 | OK |
| 227 | LT03a-10F-ULS1      | 51027.80 | 9477.48   | -5780.10  | -510.63   | 744.91    | 0.36 | OK |
| 228 | LT03a-10F-ULS10     | 44492.10 | 5677.49   | -4538.07  | 1466.07   | 1130.56   | 0.31 | OK |
| 229 | LT03a-10F-ULS11     | 44253.60 | 10559.00  | -5452.52  | -2645.39  | 263.46    | 0.32 | OK |
| 230 | LT03a-10F-ULS12     | 41900.10 | 10025.70  | -4437.75  | 2723.89   | 3728.24   | 0.30 | OK |
| 231 | LT03a-10F-ULS13     | 46845.60 | 6210.78   | -5552.83  | -3903.22  | -2334.21  | 0.33 | OK |
| 232 | LT03a-10F-ULS14     | 34476.60 | 3860.65   | -3408.93  | 1608.25   | 980.57    | 0.24 | OK |
| 233 | LT03a-10F-ULS15     | 34238.10 | 8742.18   | -4323.37  | -2503.21  | 113.47    | 0.25 | OK |
| 234 | LT03a-10F-ULS16     | 31884.70 | 8208.89   | -3308.61  | 2866.08   | 3578.24   | 0.23 | OK |
| 235 | LT03a-10F-ULS17     | 36830.10 | 4393.94   | -4423.69  | -3761.03  | -2484.21  | 0.26 | OK |
| 236 | LT03a-10F-ULS18-Max | 30876.50 | 54286.20  | 3664.63   | 49326.40  | 8276.67   | 0.36 | OK |
| 237 | LT03a-10F-ULS18-Min | 33956.40 | -41611.60 | -10439.40 | -49237.60 | -6650.87  | 0.33 | OK |
| 238 | LT03a-10F-ULS19-Max | 29749.30 | 27602.40  | 7276.88   | 22500.00  | 12328.00  | 0.27 | OK |
| 239 | LT03a-10F-ULS19-Min | 35083.60 | -14927.90 | -14051.70 | -22411.20 | -10702.30 | 0.29 | OK |
| 240 | LT03a-10F-ULS2      | 51135.20 | 7280.29   | -5368.50  | 1339.96   | 1135.20   | 0.36 | OK |
| 241 | LT03a-10F-ULS20-Max | 29018.90 | 53824.10  | 3873.96   | 49204.60  | 8260.66   | 0.35 | OK |
| 242 | LT03a-10F-ULS20-Min | 32098.80 | -42073.60 | -10230.10 | -49359.40 | -6666.88  | 0.32 | OK |
| 243 | LT03a-10F-ULS21-Max | 27891.70 | 27140.40  | 7486.22   | 22378.20  | 12312.00  | 0.25 | OK |
| 244 | LT03a-10F-ULS21-Min | 33226.00 | -15389.90 | -13842.30 | -22533.00 | -10718.30 | 0.28 | OK |
| 245 | LT03a-10F-ULS22     | 41495.20 | 7679.75   | -4689.15  | -448.22   | 625.84    | 0.30 | OK |
| 246 | LT03a-10F-ULS23     | 41526.30 | 7043.03   | -4569.87  | 88.06     | 738.94    | 0.29 | OK |
| 247 | LT03a-10F-ULS24     | 41464.00 | 8316.47   | -4808.42  | -984.50   | 512.74    | 0.30 | OK |
| 248 | LT03a-10F-ULS25     | 40850.10 | 8177.35   | -4543.70  | 416.19    | 1416.60   | 0.29 | OK |
| 249 | LT03a-10F-ULS26     | 42140.20 | 7182.15   | -4834.59  | -1312.63  | -164.91   | 0.30 | OK |
| 250 | LT03a-10F-ULS27     | 40399.80 | 6382.29   | -4355.61  | 430.62    | 804.75    | 0.29 | OK |
| 251 | LT03a-10F-ULS28     | 40296.10 | 8504.70   | -4753.19  | -1356.97  | 427.75    | 0.29 | OK |
| 252 | LT03a-10F-ULS29     | 39272.80 | 8272.83   | -4311.99  | 977.50    | 1934.17   | 0.28 | OK |
| 253 | LT03a-10F-ULS3      | 50920.50 | 11674.70  | -6191.70  | -2361.21  | 354.62    | 0.37 | OK |
| 254 | LT03a-10F-ULS30     | 41423.00 | 6614.16   | -4796.81  | -1903.85  | -701.67   | 0.29 | OK |
| 255 | LT03a-10F-ULS4      | 48801.80 | 11194.60  | -5278.20  | 2472.26   | 3473.64   | 0.35 | OK |
| 256 | LT03a-10F-ULS5      | 53253.80 | 7760.36   | -6282.00  | -3493.51  | -1983.82  | 0.38 | OK |
| 257 | LT03a-10F-ULS6      | 50483.80 | 6901.25   | -5244.66  | 1537.23   | 1173.69   | 0.35 | OK |
| 258 | LT03a-10F-ULS7      | 50245.30 | 11782.80  | -6159.10  | -2574.23  | 306.59    | 0.36 | OK |
| 259 | LT03a-10F-ULS8      | 47891.80 | 11249.50  | -5144.34  | 2795.06   | 3771.36   | 0.34 | OK |
| 260 | LT03a-10F-ULS9      | 52837.20 | 7434.54   | -6259.42  | -3832.06  | -2291.09  | 0.37 | OK |
| 261 | LT03-06F-EC_ULS-1   | 49309.90 | 6433.60   | -5744.34  | -4300.88  | 1403.24   | 0.35 | OK |
| 262 | LT03-06F-EC_ULS-10  | 51997.20 | 7850.79   | -9109.85  | -2953.06  | -3947.27  | 0.38 | OK |
| 263 | LT03-06F-EC_ULS-11  | 56776.60 | 9588.81   | -6260.58  | -210.64   | 2163.29   | 0.40 | OK |
| 264 | LT03-06F-EC_ULS-12  | 55104.70 | 6405.82   | -4563.07  | -5942.96  | 4867.30   | 0.38 | OK |
| 265 | LT03-06F-EC_ULS-13  | 56657.40 | 4923.47   | -6904.18  | -10057.90 | 1150.71   | 0.40 | OK |
| 266 | LT03-06F-EC_ULS-14  | 58329.40 | 8106.45   | -8601.68  | -4325.58  | -1553.31  | 0.42 | OK |
| 267 | LT03-06F-EC_ULS-15  | 54594.20 | 10897.20  | -5794.63  | 3321.79   | 2424.68   | 0.39 | OK |
| 268 | LT03-06F-EC_ULS-16  | 51807.60 | 5592.18   | -2965.45  | -6232.07  | 6931.38   | 0.37 | OK |
| 269 | LT03-06F-EC_ULS-17  | 54395.50 | 3121.59   | -6867.30  | -13090.30 | 737.06    | 0.38 | OK |
| 270 | LT03-06F-EC_ULS-18  | 57182.20 | 8426.57   | -9696.48  | -3536.43  | -3769.64  | 0.42 | OK |
| 271 | LT03-06F-EC_ULS-2   | 56717.00 | 7256.14   | -6582.38  | -5134.27  | 1657.00   | 0.40 | OK |
| 272 | LT03-06F-EC_ULS-3   | 36625.20 | 8653.41   | -3718.73  | 5020.21   | 1883.25   | 0.26 | OK |
| 273 | LT03-06F-EC_ULS-4   | 33838.50 | 3348.43   | -889.55   | -4533.65  | 6389.95   | 0.25 | OK |
| 274 | LT03-06F-EC_ULS-5   | 36426.50 | 877.85    | -4791.39  | -11391.90 | 195.63    | 0.26 | OK |
| 275 | LT03-06F-EC_ULS-6   | 39213.10 | 6182.82   | -7620.58  | -1838.02  | -4311.07  | 0.29 | OK |
| 276 | LT03-06F-EC_ULS-7   | 49409.20 | 10321.40  | -5208.00  | 3905.17   | 2247.06   | 0.35 | OK |
| 277 | LT03-06F-EC_ULS-8   | 46622.60 | 5016.40   | -2378.82  | -5648.70  | 6753.75   | 0.33 | OK |
| 278 | LT03-06F-EC_ULS-9   | 49210.50 | 2545.81   | -6280.67  | -12506.90 | 559.43    | 0.35 | OK |
| 279 | LT03-06F-ULS1       | 56170.30 | 7146.19   | -6519.81  | -5139.53  | 1633.23   | 0.40 | OK |
| 280 | LT03-06F-ULS10      | 48983.00 | 12604.60  | -4820.16  | 8911.82   | 2747.85   | 0.35 | OK |
| 281 | LT03-06F-ULS11      | 48663.10 | 85.93     | -6547.15  | -17511.70 | 30.77     | 0.35 | OK |
| 282 | LT03-06F-ULS12      | 44496.60 | 4063.58   | -265.18   | -6469.91  | 10003.60  | 0.33 | OK |
| 283 | LT03-06F-ULS13      | 53149.60 | 8626.94   | -11102.10 | -2129.93  | -7225.01  | 0.40 | OK |

|     |                    |          |           |           |           |           |      |    |
|-----|--------------------|----------|-----------|-----------|-----------|-----------|------|----|
| 284 | LT03-06F-ULS14     | 37964.20 | 11191.80  | -3540.50  | 9914.39   | 2434.36   | 0.28 | OK |
| 285 | LT03-06F-ULS15     | 37644.30 | -1326.91  | -5267.48  | -16509.10 | -282.72   | 0.27 | OK |
| 286 | LT03-06F-ULS16     | 33477.70 | 2650.74   | 1014.48   | -5467.33  | 9690.14   | 0.26 | OK |
| 287 | LT03-06F-ULS17     | 42130.80 | 7214.10   | -9822.46  | -1127.35  | -7538.50  | 0.32 | OK |
| 288 | LT03-06F-ULS18-Max | 33800.40 | 51504.40  | 6288.37   | 46807.50  | 12779.30  | 0.36 | OK |
| 289 | LT03-06F-ULS18-Min | 37849.80 | -44493.00 | -14526.50 | -55496.50 | -10642.40 | 0.37 | OK |
| 290 | LT03-06F-ULS19-Max | 31668.20 | 29299.00  | 11649.20  | 25375.40  | 18785.90  | 0.30 | OK |
| 291 | LT03-06F-ULS19-Min | 39982.10 | -22287.60 | -19887.30 | -34064.30 | -16649.00 | 0.35 | OK |
| 292 | LT03-06F-ULS2      | 56314.30 | 12780.90  | -5742.49  | 6753.77   | 2856.20   | 0.40 | OK |
| 293 | LT03-06F-ULS20-Max | 31732.50 | 51449.10  | 6526.38   | 47231.80  | 12719.70  | 0.35 | OK |
| 294 | LT03-06F-ULS20-Min | 35781.80 | -44548.40 | -14288.50 | -55072.20 | -10702.00 | 0.36 | OK |
| 295 | LT03-06F-ULS21-Max | 29600.20 | 29243.70  | 11887.30  | 25799.70  | 18726.30  | 0.29 | OK |
| 296 | LT03-06F-ULS21-Min | 37914.10 | -22342.90 | -19649.30 | -33640.00 | -16708.60 | 0.34 | OK |
| 297 | LT03-06F-ULS22     | 45674.70 | 5888.94   | -5304.79  | -4088.49  | 1322.43   | 0.32 | OK |
| 298 | LT03-06F-ULS23     | 45716.40 | 7521.81   | -5079.53  | -641.95   | 1676.83   | 0.32 | OK |
| 299 | LT03-06F-ULS24     | 45633.00 | 4256.07   | -5530.05  | -7535.03  | 968.03    | 0.32 | OK |
| 300 | LT03-06F-ULS25     | 44546.10 | 5293.72   | -3891.28  | -4654.57  | 3569.65   | 0.31 | OK |
| 301 | LT03-06F-ULS26     | 46803.40 | 6484.16   | -6718.31  | -3522.41  | -924.78   | 0.34 | OK |
| 302 | LT03-06F-ULS27     | 44480.70 | 8466.12   | -4782.62  | 1792.79   | 1873.70   | 0.32 | OK |
| 303 | LT03-06F-ULS28     | 44341.60 | 3023.23   | -5533.49  | -9695.67  | 692.36    | 0.31 | OK |
| 304 | LT03-06F-ULS29     | 42530.00 | 4752.64   | -2802.20  | -4894.91  | 5028.39   | 0.30 | OK |
| 305 | LT03-06F-ULS3      | 56026.30 | 1511.49   | -7297.13  | -17032.80 | 410.27    | 0.40 | OK |
| 306 | LT03-06F-ULS30     | 46292.20 | 6736.71   | -7513.91  | -3007.97  | -2462.33  | 0.34 | OK |
| 307 | LT03-06F-ULS4      | 52275.50 | 5092.20   | -1642.06  | -7092.97  | 9387.91   | 0.38 | OK |
| 308 | LT03-06F-ULS5      | 60065.10 | 9200.17   | -11397.60 | -3186.09  | -6121.44  | 0.44 | OK |
| 309 | LT03-06F-ULS6      | 55598.00 | 13325.70  | -5572.98  | 8155.90   | 2967.46   | 0.40 | OK |
| 310 | LT03-06F-ULS7      | 55278.10 | 807.04    | -7299.97  | -18267.60 | 250.38    | 0.39 | OK |
| 311 | LT03-06F-ULS8      | 51111.50 | 4784.69   | -1018.00  | -7225.82  | 10223.20  | 0.37 | OK |
| 312 | LT03-06F-ULS9      | 59764.50 | 9348.05   | -11855.00 | -2885.84  | -7005.40  | 0.44 | OK |
| 313 | LT03-07F-EC_ULS-1  | 47947.70 | 6584.04   | -5659.64  | -3565.57  | 850.32    | 0.34 | OK |
| 314 | LT03-07F-EC_ULS-10 | 50422.70 | 7796.39   | -8005.84  | -2342.71  | -3280.16  | 0.37 | OK |
| 315 | LT03-07F-EC_ULS-11 | 55196.70 | 8717.77   | -6302.86  | -705.07   | 1316.39   | 0.39 | OK |
| 316 | LT03-07F-EC_ULS-12 | 53650.90 | 6714.67   | -5103.44  | -4979.03  | 3447.17   | 0.37 | OK |
| 317 | LT03-07F-EC_ULS-13 | 55075.20 | 6166.40   | -6719.47  | -7785.56  | 621.38    | 0.39 | OK |
| 318 | LT03-07F-EC_ULS-14 | 56621.00 | 8169.49   | -7918.89  | -3511.60  | -1509.39  | 0.41 | OK |
| 319 | LT03-07F-EC_ULS-15 | 53080.70 | 9310.81   | -5908.54  | 1859.02   | 1512.49   | 0.38 | OK |
| 320 | LT03-07F-EC_ULS-16 | 50504.40 | 5972.31   | -3909.51  | -5264.25  | 5063.79   | 0.35 | OK |
| 321 | LT03-07F-EC_ULS-17 | 52878.20 | 5058.53   | -6602.88  | -9941.80  | 354.14    | 0.37 | OK |
| 322 | LT03-07F-EC_ULS-18 | 55454.50 | 8397.02   | -8601.91  | -2818.53  | -3197.15  | 0.40 | OK |
| 323 | LT03-07F-EC_ULS-2  | 55136.00 | 7442.08   | -6511.16  | -4245.32  | 968.89    | 0.39 | OK |
| 324 | LT03-07F-EC_ULS-3  | 35618.10 | 7003.21   | -3845.16  | 3259.25   | 1209.04   | 0.25 | OK |
| 325 | LT03-07F-EC_ULS-4  | 33041.80 | 3664.71   | -1846.13  | -3864.02  | 4760.34   | 0.23 | OK |
| 326 | LT03-07F-EC_ULS-5  | 35415.50 | 2750.92   | -4539.50  | -8541.57  | 50.69     | 0.25 | OK |
| 327 | LT03-07F-EC_ULS-6  | 37991.80 | 6089.42   | -6538.53  | -1418.30  | -3500.61  | 0.28 | OK |
| 328 | LT03-07F-EC_ULS-7  | 48048.90 | 8710.18   | -5312.47  | 2334.84   | 1429.49   | 0.34 | OK |
| 329 | LT03-07F-EC_ULS-8  | 45472.60 | 5371.68   | -3313.44  | -4788.42  | 4980.79   | 0.32 | OK |
| 330 | LT03-07F-EC_ULS-9  | 47846.40 | 4457.90   | -6006.81  | -9465.98  | 271.14    | 0.34 | OK |
| 331 | LT03-07F-ULS1      | 54612.90 | 7341.10   | -6448.32  | -4251.71  | 952.98    | 0.39 | OK |
| 332 | LT03-07F-ULS10     | 47645.50 | 9924.29   | -5040.66  | 5933.19   | 1774.34   | 0.34 | OK |
| 333 | LT03-07F-ULS11     | 47319.40 | 3078.11   | -6158.55  | -13066.10 | -90.60    | 0.34 | OK |
| 334 | LT03-07F-ULS12     | 43497.60 | 4549.31   | -1822.22  | -5535.27  | 7491.93   | 0.31 | OK |
| 335 | LT03-07F-ULS13     | 51467.20 | 8453.09   | -9376.99  | -1597.67  | -5808.19  | 0.38 | OK |
| 336 | LT03-07F-ULS14     | 36922.90 | 8470.85   | -3780.11  | 6766.06   | 1584.38   | 0.26 | OK |
| 337 | LT03-07F-ULS15     | 36596.90 | 1624.67   | -4898.00  | -12233.30 | -280.56   | 0.26 | OK |
| 338 | LT03-07F-ULS16     | 32775.10 | 3095.87   | -561.67   | -4702.40  | 7301.97   | 0.24 | OK |
| 339 | LT03-07F-ULS17     | 40744.70 | 6999.65   | -8116.44  | -764.80   | -5998.15  | 0.30 | OK |
| 340 | LT03-07F-ULS18-Max | 32810.00 | 50593.80  | 5752.12   | 45521.90  | 11154.00  | 0.35 | OK |
| 341 | LT03-07F-ULS18-Min | 36731.90 | -43312.90 | -13856.90 | -53006.50 | -9853.90  | 0.36 | OK |
| 342 | LT03-07F-ULS19-Max | 30766.80 | 26639.70  | 10104.40  | 22695.70  | 16489.70  | 0.28 | OK |
| 343 | LT03-07F-ULS19-Min | 38775.10 | -19358.90 | -18209.10 | -30180.30 | -15189.60 | 0.34 | OK |
| 344 | LT03-07F-ULS2      | 54759.70 | 10422.60  | -5945.16  | 4299.96   | 1792.39   | 0.39 | OK |
| 345 | LT03-07F-ULS20-Max | 30808.70 | 50515.90  | 5997.37   | 45885.60  | 11139.80  | 0.34 | OK |
| 346 | LT03-07F-ULS20-Min | 34730.60 | -43390.70 | -13611.60 | -52642.80 | -9868.12  | 0.35 | OK |



|     |                    |          |           |           |           |           |      |    |
|-----|--------------------|----------|-----------|-----------|-----------|-----------|------|----|
| 347 | LT03-07F-ULS21-Max | 28765.50 | 26561.90  | 10349.60  | 23059.40  | 16475.50  | 0.27 | OK |
| 348 | LT03-07F-ULS21-Min | 36773.80 | -19436.70 | -17963.80 | -29816.70 | -15203.80 | 0.32 | OK |
| 349 | LT03-07F-ULS22     | 44414.00 | 6036.50   | -5237.66  | -3385.85  | 787.27    | 0.31 | OK |
| 350 | LT03-07F-ULS23     | 44456.50 | 6929.48   | -5091.85  | -907.68   | 1030.53   | 0.31 | OK |
| 351 | LT03-07F-ULS24     | 44371.40 | 5143.52   | -5383.48  | -5864.02  | 544.02    | 0.31 | OK |
| 352 | LT03-07F-ULS25     | 43374.50 | 5527.31   | -4252.26  | -3899.45  | 2522.07   | 0.30 | OK |
| 353 | LT03-07F-ULS26     | 45453.50 | 6545.69   | -6223.07  | -2872.25  | -947.52   | 0.33 | OK |
| 354 | LT03-07F-ULS27     | 43257.60 | 7375.44   | -4846.64  | 856.02    | 1175.10   | 0.31 | OK |
| 355 | LT03-07F-ULS28     | 43115.90 | 4398.84   | -5332.68  | -7404.55  | 364.26    | 0.30 | OK |
| 356 | LT03-07F-ULS29     | 41454.20 | 5038.49   | -3447.32  | -4130.26  | 3661.01   | 0.29 | OK |
| 357 | LT03-07F-ULS3      | 54466.20 | 4259.61   | -6951.49  | -12803.40 | 113.56    | 0.39 | OK |
| 358 | LT03-07F-ULS30     | 44919.30 | 6735.79   | -6732.01  | -2418.26  | -2121.65  | 0.32 | OK |
| 359 | LT03-07F-ULS4      | 51025.80 | 5583.99   | -3047.89  | -6024.03  | 6939.41   | 0.36 | OK |
| 360 | LT03-07F-ULS5      | 58200.10 | 9098.20   | -9848.75  | -2479.38  | -5033.46  | 0.42 | OK |
| 361 | LT03-07F-ULS6      | 54065.30 | 10680.50  | -5804.79  | 5316.26   | 1874.37   | 0.39 | OK |
| 362 | LT03-07F-ULS7      | 53739.20 | 3834.31   | -6922.68  | -13683.10 | 9.43      | 0.38 | OK |
| 363 | LT03-07F-ULS8      | 49917.40 | 5305.51   | -2586.35  | -6152.20  | 7591.96   | 0.36 | OK |
| 364 | LT03-07F-ULS9      | 57887.00 | 9209.28   | -10141.10 | -2214.60  | -5708.16  | 0.42 | OK |
| 365 | LT03-08F-EC_ULS-1  | 46512.20 | 6644.56   | -5534.06  | -3194.56  | 675.14    | 0.33 | OK |
| 366 | LT03-08F-EC_ULS-10 | 48773.20 | 7696.98   | -7033.25  | -2117.49  | -2480.15  | 0.35 | OK |
| 367 | LT03-08F-EC_ULS-11 | 53535.50 | 7919.89   | -6277.44  | -1323.67  | 978.56    | 0.38 | OK |
| 368 | LT03-08F-EC_ULS-12 | 52116.90 | 6893.39   | -5481.48  | -4449.55  | 2635.16   | 0.37 | OK |
| 369 | LT03-08F-EC_ULS-13 | 53411.60 | 7129.80   | -6484.55  | -6282.95  | 505.41    | 0.38 | OK |
| 370 | LT03-08F-EC_ULS-14 | 54830.20 | 8156.29   | -7280.51  | -3157.07  | -1151.19  | 0.39 | OK |
| 371 | LT03-08F-EC_ULS-15 | 51488.40 | 7919.17   | -5954.32  | 512.05    | 1116.22   | 0.36 | OK |
| 372 | LT03-08F-EC_ULS-16 | 49124.00 | 6208.34   | -4627.73  | -4697.76  | 3877.22   | 0.34 | OK |
| 373 | LT03-08F-EC_ULS-17 | 51281.90 | 6602.35   | -6299.51  | -7753.42  | 327.65    | 0.36 | OK |
| 374 | LT03-08F-EC_ULS-18 | 53646.20 | 8313.18   | -7626.10  | -2543.61  | -2433.36  | 0.39 | OK |
| 375 | LT03-08F-EC_ULS-2  | 53473.50 | 7524.84   | -6380.99  | -3803.31  | 741.99    | 0.38 | OK |
| 376 | LT03-08F-EC_ULS-3  | 34556.70 | 5580.31   | -3926.71  | 1766.40   | 894.39    | 0.24 | OK |
| 377 | LT03-08F-EC_ULS-4  | 32192.30 | 3869.48   | -2600.12  | -3443.41  | 3655.40   | 0.22 | OK |
| 378 | LT03-08F-EC_ULS-5  | 34350.20 | 4263.48   | -4271.90  | -6499.08  | 105.82    | 0.24 | OK |
| 379 | LT03-08F-EC_ULS-6  | 36714.50 | 5974.31   | -5598.49  | -1289.27  | -2655.18  | 0.27 | OK |
| 380 | LT03-08F-EC_ULS-7  | 46615.40 | 7302.97   | -5361.46  | 938.18    | 1069.43   | 0.33 | OK |
| 381 | LT03-08F-EC_ULS-8  | 44251.10 | 5592.14   | -4034.87  | -4271.63  | 3830.44   | 0.31 | OK |
| 382 | LT03-08F-EC_ULS-9  | 46408.90 | 5986.15   | -5706.66  | -7327.29  | 280.86    | 0.33 | OK |
| 383 | LT03-08F-ULS1      | 52973.60 | 7431.51   | -6318.95  | -3806.51  | 729.16    | 0.38 | OK |
| 384 | LT03-08F-ULS10     | 46234.10 | 7627.01   | -5197.48  | 3459.14   | 1303.28   | 0.33 | OK |
| 385 | LT03-08F-ULS11     | 45901.60 | 5506.92   | -5753.25  | -9848.28  | 33.69     | 0.33 | OK |
| 386 | LT03-08F-ULS12     | 42427.50 | 4872.57   | -3061.67  | -4928.65  | 5748.50   | 0.30 | OK |
| 387 | LT03-08F-ULS13     | 49708.20 | 8261.36   | -7889.06  | -1460.49  | -4411.53  | 0.36 | OK |
| 388 | LT03-08F-ULS14     | 35825.60 | 6154.21   | -3964.90  | 4204.55   | 1152.41   | 0.25 | OK |
| 389 | LT03-08F-ULS15     | 35493.10 | 4034.12   | -4520.66  | -9102.87  | -117.19   | 0.25 | OK |
| 390 | LT03-08F-ULS16     | 32019.00 | 3399.77   | -1829.09  | -4183.25  | 5597.63   | 0.23 | OK |
| 391 | LT03-08F-ULS17     | 39299.70 | 6788.56   | -6656.47  | -715.08   | -4562.41  | 0.29 | OK |
| 392 | LT03-08F-ULS18-Max | 31780.40 | 49991.80  | 5570.18   | 44504.70  | 10405.80  | 0.35 | OK |
| 393 | LT03-08F-ULS18-Min | 35573.20 | -42530.20 | -13479.30 | -51362.40 | -9348.57  | 0.35 | OK |
| 394 | LT03-08F-ULS19-Max | 29835.10 | 24845.00  | 9012.62   | 20213.60  | 14777.60  | 0.26 | OK |
| 395 | LT03-08F-ULS19-Min | 37518.60 | -17383.40 | -16921.70 | -27071.40 | -13720.40 | 0.32 | OK |
| 396 | LT03-08F-ULS2      | 53123.20 | 8385.77   | -6068.80  | 2183.20   | 1300.61   | 0.38 | OK |
| 397 | LT03-08F-ULS20-Max | 29846.90 | 49894.10  | 5816.11   | 44835.50  | 10409.20  | 0.34 | OK |
| 398 | LT03-08F-ULS20-Min | 33639.60 | -42627.80 | -13233.30 | -51031.60 | -9345.19  | 0.34 | OK |
| 399 | LT03-08F-ULS21-Max | 27901.50 | 24747.30  | 9258.54   | 20544.50  | 14781.00  | 0.25 | OK |
| 400 | LT03-08F-ULS21-Min | 35585.00 | -17481.00 | -16675.80 | -26740.60 | -13717.00 | 0.31 | OK |
| 401 | LT03-08F-ULS22     | 43085.30 | 6100.92   | -5127.70  | -3034.46  | 613.78    | 0.31 | OK |
| 402 | LT03-08F-ULS23     | 43128.70 | 6377.46   | -5055.21  | -1298.71  | 779.38    | 0.31 | OK |
| 403 | LT03-08F-ULS24     | 43042.00 | 5824.39   | -5200.19  | -4770.21  | 448.18    | 0.30 | OK |
| 404 | LT03-08F-ULS25     | 42135.70 | 5658.91   | -4498.04  | -3486.83  | 1939.00   | 0.30 | OK |
| 405 | LT03-08F-ULS26     | 44035.00 | 6542.94   | -5757.36  | -2582.09  | -711.44   | 0.31 | OK |
| 406 | LT03-08F-ULS27     | 41968.30 | 6409.42   | -4860.41  | -40.92    | 880.11    | 0.30 | OK |
| 407 | LT03-08F-ULS28     | 41823.80 | 5487.64   | -5102.04  | -5826.75  | 328.11    | 0.30 | OK |
| 408 | LT03-08F-ULS29     | 40313.30 | 5211.84   | -3931.79  | -3687.78  | 2812.82   | 0.28 | OK |
| 409 | LT03-08F-ULS3      | 52824.00 | 6477.25   | -6569.10  | -9796.23  | 157.71    | 0.37 | OK |

|     |                    |          |           |           |           |           |      |    |
|-----|--------------------|----------|-----------|-----------|-----------|-----------|------|----|
| 410 | LT03-08F-ULS30     | 43478.80 | 6685.22   | -6030.66  | -2179.88  | -1604.59  | 0.31 | OK |
| 411 | LT03-08F-ULS4      | 49696.50 | 5906.20   | -4146.13  | -5367.55  | 5302.23   | 0.34 | OK |
| 412 | LT03-08F-ULS5      | 56250.70 | 8956.81   | -8491.77  | -2245.48  | -3843.90  | 0.41 | OK |
| 413 | LT03-08F-ULS6      | 52451.50 | 8405.39   | -5956.99  | 2908.19   | 1357.91   | 0.37 | OK |
| 414 | LT03-08F-ULS7      | 52119.10 | 6285.30   | -6512.76  | -10399.20 | 88.32     | 0.37 | OK |
| 415 | LT03-08F-ULS8      | 48644.90 | 5650.95   | -3821.18  | -5479.60  | 5803.13   | 0.34 | OK |
| 416 | LT03-08F-ULS9      | 55925.70 | 9039.74   | -8648.57  | -2011.43  | -4356.90  | 0.40 | OK |
| 417 | LT03-09F-EC_ULS-1  | 45012.90 | 6629.76   | -5376.31  | -2892.84  | 540.88    | 0.32 | OK |
| 418 | LT03-09F-EC_ULS-10 | 47062.60 | 7554.52   | -6183.19  | -1926.04  | -1794.74  | 0.34 | OK |
| 419 | LT03-09F-EC_ULS-11 | 51803.00 | 7187.50   | -6192.03  | -1858.51  | 706.04    | 0.37 | OK |
| 420 | LT03-09F-EC_ULS-12 | 50510.40 | 6963.19   | -5722.76  | -4020.99  | 1974.98   | 0.36 | OK |
| 421 | LT03-09F-EC_ULS-13 | 51677.50 | 7848.61   | -6221.75  | -5023.31  | 441.17    | 0.37 | OK |
| 422 | LT03-09F-EC_ULS-14 | 52970.10 | 8072.91   | -6691.02  | -2860.83  | -827.77   | 0.38 | OK |
| 423 | LT03-09F-EC_ULS-15 | 49826.70 | 6700.65   | -5932.95  | -639.15   | 784.52    | 0.35 | OK |
| 424 | LT03-09F-EC_ULS-16 | 47672.30 | 6326.80   | -5150.83  | -4243.29  | 2899.41   | 0.34 | OK |
| 425 | LT03-09F-EC_ULS-17 | 49617.40 | 7802.48   | -5982.48  | -5913.83  | 343.06    | 0.35 | OK |
| 426 | LT03-09F-EC_ULS-18 | 51771.80 | 8176.33   | -6764.60  | -2309.69  | -1771.84  | 0.37 | OK |
| 427 | LT03-09F-EC_ULS-2  | 51740.30 | 7518.05   | -6206.89  | -3440.91  | 573.60    | 0.37 | OK |
| 428 | LT03-09F-EC_ULS-3  | 33447.50 | 4360.01   | -3957.69  | 494.49    | 621.38    | 0.24 | OK |
| 429 | LT03-09F-EC_ULS-4  | 31293.20 | 3986.16   | -3175.57  | -3109.65  | 2736.28   | 0.22 | OK |
| 430 | LT03-09F-EC_ULS-5  | 33238.30 | 5461.85   | -4007.21  | -4780.18  | 179.92    | 0.24 | OK |
| 431 | LT03-09F-EC_ULS-6  | 35392.60 | 5835.70   | -4789.33  | -1176.05  | -1934.97  | 0.25 | OK |
| 432 | LT03-09F-EC_ULS-7  | 45117.60 | 6078.84   | -5351.55  | -255.51   | 761.61    | 0.32 | OK |
| 433 | LT03-09F-EC_ULS-8  | 42963.20 | 5704.99   | -4569.43  | -3859.64  | 2876.51   | 0.30 | OK |
| 434 | LT03-09F-EC_ULS-9  | 44908.30 | 7180.67   | -5401.07  | -5530.18  | 320.15    | 0.32 | OK |
| 435 | LT03-09F-ULS1      | 51263.00 | 7431.55   | -6146.29  | -3442.04  | 562.77    | 0.36 | OK |
| 436 | LT03-09F-ULS10     | 44757.50 | 5670.04   | -5279.52  | 1353.96   | 890.65    | 0.32 | OK |
| 437 | LT03-09F-ULS11     | 44420.50 | 7444.00   | -5359.26  | -7138.26  | 179.90    | 0.32 | OK |
| 438 | LT03-09F-ULS12     | 41288.90 | 5068.15   | -4020.31  | -4448.70  | 4295.64   | 0.29 | OK |
| 439 | LT03-09F-ULS13     | 47889.00 | 8045.89   | -6618.47  | -1335.60  | -3225.08  | 0.34 | OK |
| 440 | LT03-09F-ULS14     | 34678.40 | 4195.83   | -4081.97  | 2028.26   | 770.05    | 0.24 | OK |
| 441 | LT03-09F-ULS15     | 34341.40 | 5969.79   | -4161.70  | -6463.96  | 59.30     | 0.24 | OK |
| 442 | LT03-09F-ULS16     | 31209.90 | 3593.94   | -2822.76  | -3774.40  | 4175.03   | 0.22 | OK |
| 443 | LT03-09F-ULS17     | 37809.90 | 6571.69   | -5420.92  | -661.30   | -3345.68  | 0.27 | OK |
| 444 | LT03-09F-ULS18-Max | 30713.50 | 49526.80  | 5512.87   | 43843.70  | 10011.60  | 0.34 | OK |
| 445 | LT03-09F-ULS18-Min | 34381.20 | -41980.30 | -13181.00 | -50142.00 | -9136.45  | 0.34 | OK |
| 446 | LT03-09F-ULS19-Max | 28871.50 | 23917.00  | 8311.78   | 18533.80  | 13489.10  | 0.25 | OK |
| 447 | LT03-09F-ULS19-Min | 36223.10 | -16370.50 | -15979.90 | -24832.20 | -12613.90 | 0.31 | OK |
| 448 | LT03-09F-ULS2      | 51414.60 | 6633.09   | -6110.40  | 380.34    | 882.68    | 0.36 | OK |
| 449 | LT03-09F-ULS20-Max | 28848.60 | 49414.10  | 5755.22   | 44143.70  | 10026.20  | 0.33 | OK |
| 450 | LT03-09F-ULS20-Min | 32516.30 | -42093.10 | -12938.70 | -49842.00 | -9121.84  | 0.33 | OK |
| 451 | LT03-09F-ULS21-Max | 27006.70 | 23804.30  | 8554.12   | 18833.90  | 13503.70  | 0.24 | OK |
| 452 | LT03-09F-ULS21-Min | 34358.30 | -16483.20 | -15737.60 | -24532.10 | -12599.30 | 0.30 | OK |
| 453 | LT03-09F-ULS22     | 41697.70 | 6093.85   | -4985.03  | -2747.05  | 482.94    | 0.30 | OK |
| 454 | LT03-09F-ULS23     | 41741.70 | 5862.46   | -4974.63  | -1639.37  | 575.65    | 0.30 | OK |
| 455 | LT03-09F-ULS24     | 41653.80 | 6325.23   | -4995.43  | -3854.73  | 390.24    | 0.30 | OK |
| 456 | LT03-09F-ULS25     | 40836.80 | 5705.45   | -4646.14  | -3153.11  | 1463.91   | 0.29 | OK |
| 457 | LT03-09F-ULS26     | 42558.60 | 6482.25   | -5323.92  | -2341.00  | -498.02   | 0.30 | OK |
| 458 | LT03-09F-ULS27     | 40620.90 | 5555.02   | -4824.55  | -809.71   | 632.96    | 0.29 | OK |
| 459 | LT03-09F-ULS28     | 40474.40 | 6326.31   | -4859.22  | -4501.98  | 323.94    | 0.29 | OK |
| 460 | LT03-09F-ULS29     | 39112.90 | 5293.33   | -4277.07  | -3332.61  | 2113.39   | 0.28 | OK |
| 461 | LT03-09F-ULS3      | 51111.30 | 8230.02   | -6182.18  | -7264.42  | 242.86    | 0.36 | OK |
| 462 | LT03-09F-ULS30     | 41982.50 | 6588.00   | -5406.70  | -1979.09  | -1156.49  | 0.30 | OK |
| 463 | LT03-09F-ULS4      | 48292.30 | 6091.26   | -4976.85  | -4843.25  | 3947.87   | 0.34 | OK |
| 464 | LT03-09F-ULS5      | 54233.70 | 8771.85   | -7315.73  | -2040.82  | -2822.33  | 0.39 | OK |
| 465 | LT03-09F-ULS6      | 50766.30 | 6457.41   | -6024.01  | 858.89    | 915.40    | 0.36 | OK |
| 466 | LT03-09F-ULS7      | 50429.30 | 8231.37   | -6103.74  | -7633.34  | 204.65    | 0.36 | OK |
| 467 | LT03-09F-ULS8      | 47297.70 | 5855.52   | -4764.80  | -4943.77  | 4320.38   | 0.33 | OK |
| 468 | LT03-09F-ULS9      | 53897.80 | 8833.27   | -7362.95  | -1830.68  | -3200.33  | 0.39 | OK |
| 469 | LT03-10F-EC_ULS-1  | 43456.30 | 6559.93   | -5198.50  | -2647.44  | 436.53    | 0.31 | OK |
| 470 | LT03-10F-EC_ULS-10 | 45300.10 | 7375.17   | -5439.20  | -1765.49  | -1220.61  | 0.32 | OK |
| 471 | LT03-10F-EC_ULS-11 | 50006.30 | 6529.17   | -6061.80  | -2313.31  | 489.56    | 0.35 | OK |
| 472 | LT03-10F-EC_ULS-12 | 48837.00 | 6957.19   | -5861.24  | -3675.66  | 1440.67   | 0.35 | OK |

|     |                    |          |           |           |           |           |      |    |
|-----|--------------------|----------|-----------|-----------|-----------|-----------|------|----|
| 473 | LT03-10F-EC_ULS-13 | 49880.10 | 8363.49   | -5949.51  | -3979.68  | 403.21    | 0.36 | OK |
| 474 | LT03-10F-EC_ULS-14 | 51049.50 | 7935.47   | -6150.07  | -2617.33  | -547.90   | 0.36 | OK |
| 475 | LT03-10F-EC_ULS-15 | 48102.30 | 5651.81   | -5857.08  | -1608.14  | 515.38    | 0.34 | OK |
| 476 | LT03-10F-EC_ULS-16 | 46153.40 | 6365.17   | -5522.81  | -3878.72  | 2100.57   | 0.33 | OK |
| 477 | LT03-10F-EC_ULS-17 | 47892.00 | 8709.01   | -5669.94  | -4385.42  | 371.47    | 0.34 | OK |
| 478 | LT03-10F-EC_ULS-18 | 49840.90 | 7995.65   | -6004.21  | -2114.83  | -1213.71  | 0.35 | OK |
| 479 | LT03-10F-EC_ULS-2  | 49943.20 | 7446.33   | -6005.66  | -3146.49  | 446.38    | 0.35 | OK |
| 480 | LT03-10F-EC_ULS-3  | 32295.00 | 3330.60   | -3944.31  | -572.42   | 395.31    | 0.23 | OK |
| 481 | LT03-10F-EC_ULS-4  | 30346.10 | 4043.97   | -3610.04  | -2843.01  | 1980.50   | 0.21 | OK |
| 482 | LT03-10F-EC_ULS-5  | 32084.70 | 6387.81   | -3757.17  | -3349.71  | 251.40    | 0.23 | OK |
| 483 | LT03-10F-EC_ULS-6  | 34033.60 | 5674.44   | -4091.44  | -1079.12  | -1333.78  | 0.24 | OK |
| 484 | LT03-10F-EC_ULS-7  | 43561.50 | 5031.33   | -5292.07  | -1258.80  | 508.49    | 0.31 | OK |
| 485 | LT03-10F-EC_ULS-8  | 41612.60 | 5744.69   | -4957.80  | -3529.38  | 2093.68   | 0.29 | OK |
| 486 | LT03-10F-EC_ULS-9  | 43351.20 | 8088.53   | -5104.93  | -4036.08  | 364.58    | 0.31 | OK |
| 487 | LT03-10F-ULS1      | 49488.00 | 7365.90   | -5946.84  | -3146.15  | 436.85    | 0.35 | OK |
| 488 | LT03-10F-ULS10     | 43221.50 | 4030.63   | -5294.22  | -410.56   | 547.37    | 0.31 | OK |
| 489 | LT03-10F-ULS11     | 42882.90 | 8952.74   | -4992.93  | -4881.99  | 315.67    | 0.31 | OK |
| 490 | LT03-10F-ULS12     | 40083.80 | 5179.15   | -4756.05  | -4066.20  | 3099.52   | 0.28 | OK |
| 491 | LT03-10F-ULS13     | 46020.60 | 7804.22   | -5531.10  | -1226.34  | -2236.48  | 0.33 | OK |
| 492 | LT03-10F-ULS14     | 33485.80 | 2568.23   | -4136.16  | 206.01    | 450.52    | 0.24 | OK |
| 493 | LT03-10F-ULS15     | 33147.20 | 7490.33   | -3834.87  | -4265.42  | 218.83    | 0.24 | OK |
| 494 | LT03-10F-ULS16     | 30348.10 | 3716.75   | -3597.99  | -3449.63  | 3002.68   | 0.21 | OK |
| 495 | LT03-10F-ULS17     | 36284.90 | 6341.81   | -4373.04  | -609.77   | -2333.32  | 0.26 | OK |
| 496 | LT03-10F-ULS18-Max | 29611.30 | 49142.00  | 5474.47   | 43359.70  | 9751.87   | 0.33 | OK |
| 497 | LT03-10F-ULS18-Min | 33158.80 | -41582.00 | -12874.90 | -49173.70 | -9017.37  | 0.33 | OK |
| 498 | LT03-10F-ULS19-Max | 27875.20 | 23660.20  | 7887.86   | 17662.30  | 12579.40  | 0.24 | OK |
| 499 | LT03-10F-ULS19-Min | 34894.90 | -16100.30 | -15288.30 | -23476.40 | -11844.90 | 0.30 | OK |
| 500 | LT03-10F-ULS2      | 49640.40 | 5150.45   | -6082.45  | -1133.55  | 541.13    | 0.35 | OK |
| 501 | LT03-10F-ULS20-Max | 27816.10 | 49017.70  | 5710.57   | 43633.10  | 9773.59   | 0.32 | OK |
| 502 | LT03-10F-ULS20-Min | 31363.60 | -41706.40 | -12638.80 | -48900.20 | -8995.65  | 0.32 | OK |
| 503 | LT03-10F-ULS21-Max | 26080.00 | 23535.90  | 8123.96   | 17935.80  | 12601.10  | 0.23 | OK |
| 504 | LT03-10F-ULS21-Min | 33099.70 | -16224.60 | -15052.20 | -23202.90 | -11823.20 | 0.29 | OK |
| 505 | LT03-10F-ULS22     | 40256.90 | 6034.76   | -4822.08  | -2513.43  | 382.61    | 0.29 | OK |
| 506 | LT03-10F-ULS23     | 40301.10 | 5392.74   | -4861.38  | -1930.20  | 412.83    | 0.29 | OK |
| 507 | LT03-10F-ULS24     | 40212.70 | 6676.77   | -4782.78  | -3096.66  | 352.39    | 0.29 | OK |
| 508 | LT03-10F-ULS25     | 39482.50 | 5692.36   | -4720.99  | -2883.84  | 1078.61   | 0.28 | OK |
| 509 | LT03-10F-ULS26     | 41031.30 | 6377.15   | -4923.17  | -2143.01  | -313.39   | 0.29 | OK |
| 510 | LT03-10F-ULS27     | 39220.90 | 4812.30   | -4748.81  | -1457.80  | 431.92    | 0.28 | OK |
| 511 | LT03-10F-ULS28     | 39073.70 | 6952.35   | -4617.82  | -3401.90  | 331.19    | 0.28 | OK |
| 512 | LT03-10F-ULS29     | 37856.70 | 5311.66   | -4514.83  | -3047.21  | 1541.55   | 0.27 | OK |
| 513 | LT03-10F-ULS3      | 49335.60 | 9581.36   | -5811.23  | -5158.76  | 332.56    | 0.35 | OK |
| 514 | LT03-10F-ULS30     | 40437.90 | 6452.99   | -4851.80  | -1812.49  | -778.45   | 0.29 | OK |
| 515 | LT03-10F-ULS4      | 46815.80 | 6184.35   | -5597.99  | -4424.39  | 2838.60   | 0.33 | OK |
| 516 | LT03-10F-ULS5      | 52160.20 | 8547.45   | -6295.69  | -1867.92  | -1964.91  | 0.37 | OK |
| 517 | LT03-10F-ULS6      | 49015.90 | 4817.72   | -6017.42  | -860.62   | 552.16    | 0.35 | OK |
| 518 | LT03-10F-ULS7      | 48677.30 | 9739.83   | -5716.13  | -5332.04  | 320.47    | 0.35 | OK |
| 519 | LT03-10F-ULS8      | 45878.10 | 5966.24   | -5479.26  | -4516.26  | 3104.31   | 0.32 | OK |
| 520 | LT03-10F-ULS9      | 51815.00 | 8591.31   | -6254.30  | -1676.40  | -2231.68  | 0.37 | OK |

### III. KIỂM TRA KHẢ NĂNG CHỊU CẮT

$f_{ck} = 40.00 \text{ MPa}$ ,  $f_{yw} = 500.00 \text{ MPa}$ ,  $E_s = 200000 \text{ MPa}$

$A_{sw,x} = 11309.7 \text{ mm}^2/\text{m}$ ,  $A_{sw,y} = 24881.4 \text{ mm}^2/\text{m}$

#### Nội lực thiết kế:

$V_{x,max} = 1538.32 \text{ kN}$

$V_{y,max} = 4977.42 \text{ kN}$

#### 1. Tính toán khả năng chịu cắt của tiết diện:

$VR_{dmax,x} = \Sigma w_1 * \alpha_{cw} * \mu_{uy1} * z_1 * f_{yd} / (\cot\theta + \tan\theta) = 19601.57$

$VR_{dc,x} = \Sigma w_1 * d_1 * [\text{Max}\{CR_{d\_c} * k * \text{pow}(100.0 * \rho_1 * f_{ck}, 1/3); v_{min}\} + k_1 * \sigma_{cp}] = 2742.44 \text{ kN}$

$VR_{ds,x} = A_{sw} * z_1 * f_{yd} * \cot\theta = 1415.91 \text{ kN}$

$VR_{d,x} = \text{Max}\{VR_{dc,x}; VR_{ds,x}\} = 2742.44 \text{ kN}$

$VR_{dmax,y} = \Sigma w_2 * \alpha_{cw} * \mu_{uy1} * z_2 * f_{yd} / (\cot\theta + \tan\theta) = 20414.42$

$VR_{dc,y} = \Sigma w_2 * d_2 * [\text{Max}\{CR_{d\_c} * k * \text{pow}(100.0 * \rho_1 * f_{ck}, 1/3); v_{min}\} + k_1 * \sigma_{cp}] = 2587.34 \text{ kN}$

$VR_{ds,y} = A_{sw} * z_2 * f_{yd} * \cot\theta = 5142.97 \text{ kN}$

$VR_{d,y} = \text{Max}\{VR_{dc,y}; VR_{ds,y}\} = 5142.97 \text{ kN}$

Note:

```
w1 = w2 = 10 mm
d1, d2 is variable. z1 = 0.9 * d1, z2 = 0.9 * d2
fcd = fck /  $\gamma_c$ ; fyd = fyw /  $\gamma_s$ 
cot $\theta$  = 1.0; CRd_c = 0.18 /  $\gamma_c$ 
vmin = 0.035 * pow(k, 1.5) * sqrt(fck) = 0.285
k1 = 0.15
 $\rho_l$  = 0.0200
NEd,x = 31668.20 kN, NEd,y = 36635.20 kN
sigma_cp = NEd / Ac < 0.2 * fcd;  $\alpha_{cw}$  = 1.0
```

## 2. Trạng thái kiểm tra:

Theo Trục Vx:

Vx,max < VRdmax,x? ----→

**OK**

Vx,max < VRd,x? ----→

**OK, Cấu kiện đạt yêu cầu.**

Theo Trục Vy:

Vy,max < VRdmax,y? ----→

**OK**

Vy,max < VRd,y? ----→

**OK, Cấu kiện đạt yêu cầu.**