TU

Vienna University of Technology

FINAL YEAR PROJECT OF TOPOGRAPHY

Creation of a 3D Photo-Model

Realised in the
Institute of Photogrammetry and Remote Sensing
of the Vienna University of Technology
by

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1. INTRODUCTION

1.1 La Vall d'Uixo

The town of La Vall d'Uixo belongs to the district of la Plana Baixa, inside the County of Castellon de la Plana which is one of the three counties of the Comunidad Valenciana, located to the east of the Iberian peninsula. The city is situated in a valley which is crossed by the river Belcaire. The city has 29.185 inhabitants and covers an area of 68.2 km². It is situated 118m over the sea level. It has a maximum temperature of 35℃.

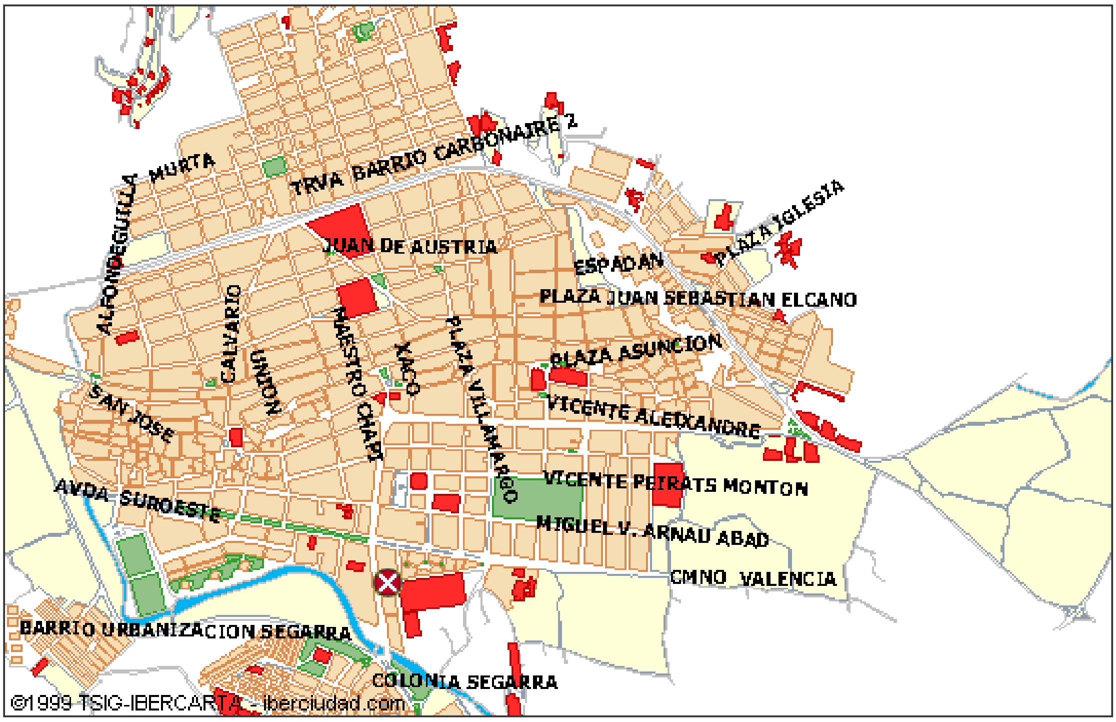


Figure 1.1 La Vall d'Uixo

The greatest part of its population is employed in industry due to a great number of companies. However, the population traditionally were agricultural workers. The terrain of Vall d'Uixo is characterized by a special relief around the river Belcaire and closed Cervola ravine, full of small elevations and hills of steep slope. Eight kilometers from the Mediterranean sea, the valley is rich in agricultural possibilities and it unites the valley of the river Palacia with la Plana de Castellon.

1.1.1 History

The archaeological investigations have brought to the light a total of seventeen towns of the Bronze Age that were built along the valley. At the end of this period, already during the Iron Age, a single location with remains of a possible wall confirms us that settlement was continued in the same towns.

In the Iberian time there was a bigger development. Two Iberian locations show remains of fortifications:

- Sant Josep, in a hillside of easy access, presents a wall flanked by two strong square towers.
- The Tip, with a system of defence consisting of three lines which exceeded the urban nucleus. This Iberian city even conserves remains of two towers with cyclopean appearance.

In the first centuries of the Roman dominance, the fortified towns were left and successively went to ruins. However, it is probable that some defence towers remained in the old indigenous establishments. The population moved to the valley, distributed in villages in the whole plain. From this period, i.e. the 6th and 7th centuries, a Hispano-Gothic necropolis called Uxo which was situated beneath the current city has been excavated by experts of the Municipal Museum of Vall d’Uixo. Eight graves containing the remains of 66 persons were found.

Practically nothing is known about the period the liquidation of the Roman world and the beginnings of the Islamic dominance. The remains of „the Cova” and those of the „Punta del Cid de Almenara” (neighbouring town to Vall d'Uixo) belong to that period. The latter covers an area of almost eight thousand m^2 surrounded by a trapezoidal wall in which fifteen towers are conserved.

In the Islamic area, the population is distributed in nine bigger nuclei and four smaller located in what is today La Vall d’Uixo. In some of them towers rose of which only three remain, one of them in the centre of Vall d’Uixo (Benizahat) and the other ones outside of the current city: “La Casota” and “La Torrassa."

The only site excavated is that of Torrassa which consists of a tower of 7.1 x 4.6 m^2 with walls that reach a height of 5m and a reservoir of 9.4 x 5.1 m^2 covered by a barrel vault.

King Jaume I coquered this land in 1238. The most important defensive structure built in the early christian period is the “Castle of Hispanic-Muslim origin” on a hill situated in the west side of the valley of Uixo, about 4km from the centre of the town. It consists of a polygonal structure of 54 x 25m^2 dating from the 10^{th} and 11^{th} centuries. In the summit there are the remains of a small village of the Christian period (12^{th} and 14^{th} centuries). A polygonal enclosure with bastions was built. All but one of the bastions are rectangular, the other one forming on semi-circle. All these structures, contemporary of the centuries 10^{th} and 11^{th}, are surrounded by another one whose polygonal lines formed a first defence line.

In the Middle Ages, Vall d’Uixo was part of the royal land until 1436, when the King Alfonso el Magnanimo conferred it to his brother Enrique.

1.2 La Asuncion

The Church La Asuncion belongs to the southern part of Vall d'Uixo. It is situated in Asuncion Square between Benizahat street and Castellón street.

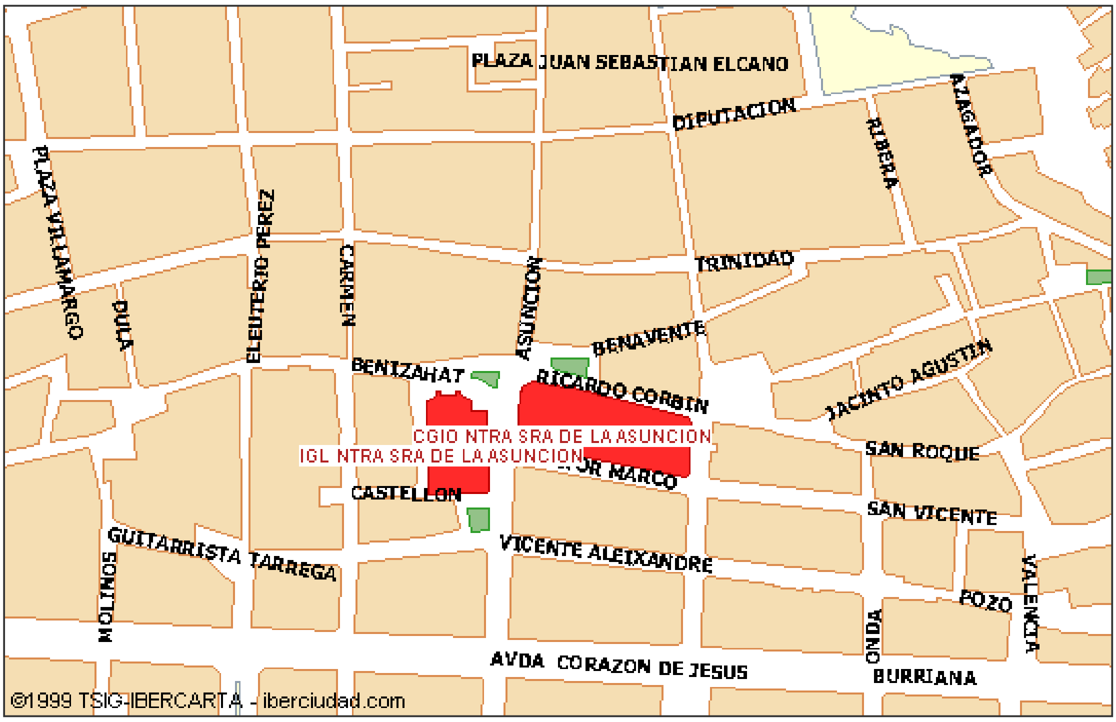


Figure 1.2: Church La Asuncion

1.2.1 History of the church

Soon after the ban by which Carlos I, King of Spain, abolished the Islamic cult officially in 1525 and after the Revolt of Espadan (Castellón, 1526), the population of Vall d'Uixo, for the most part Muslim, had to choose between being converted to Christianity or to abandon the Kingdom of Valencia, looking for refuge in North Africa. Taking into account the great number of mudejars who had to be baptised, plans for the construction of a new parochial church were made.

In 1530, the collector of the Duke of Segorbe charged 30 pounds for the lease of the two mosques in La Vall d'Uixo, *Alcudia* and *Benizahat*. In 1534 the Apostolic Commissaries reorganized the religious life of that Vall d'Uixo by two churches:

La Alcudia and *Benizahat*, the former mosques, both depending on the same parish: Chapel of the Palace built by the Duke of Segorbe.

It is sure that Benizahat was the original church of La Asuncion. It was already venerated on the day of the Assumption of the Blessed Virgin in 1534, and in 1602, a new parish associated to the church was created.

The original church of the Asunción of Benizahat is known to have occupied a part of the current perimeter of the church because an ancient report states that it was in „the square of Benizahat". As it was a mosque dedicated to the Christian cult, it was a building of certain antiquity which had been damaged in the course of the centuries. During his visit of the church in 1594, the General Vicar of the diocese of Tortosa pointed out that he had found a destroyed church with parts of the vault threatening to fall down. That is why in 1602, Pope Clemens VIII decided to build a new temple and to repair Benizahat. The restoration was carried out between 1598 and 1602. After the reconstruction, the church of Benizahat was a little bigger than the original one. It had two altars dedicated to the Assumption of the Blessed Virgin and the Virgin of the Rosary.

Pope Clemens VIII ordered to establish a new parish in 1602, but this plans were not carried out before May 5, 1608 when, following a plea of bishop Don Pedro Manrique of Tortosa, King Felipe III of Spain approved the proposal. In 1608, monsignor Pedro Montiel, who had already been rector of Vall d'Uixo for ten years, started to serve in the new parish.

However, the expulsion of almost 3000 people of the Moorish community from the city in 1609 and the depopulation of their land created a situation of uncertainty because the Moorish people who were staying in Vall d’Uixo had to be baptised. In 1616, the bishop of Tortosa ordered to install baptismal fonts in the two parishes of Vall d'Uixo. With the arrival of new residents who settled down in the houses and the land abandoned by the Moorish, the two churches of Vall d’Uixo became insufficient. For that reason, in 1635, the builders Tomas Lleonart and Tomas Panes of Valencia planned two new parochial churches. The first phase of the church of the Assumpcio, without the cruise and the apse, should be finished in 1645. We know this because a contract has been preserved stating that in this year the carpenter Jaume Tender should execute the lateral doors. The body of the construction being finished, the interior ornamentation was carried out gradually and to a rhythm appropriate to the economical possibilities of the village. In 1685, in the same temple, the number of altars had increased up to seven.

The rest of the first original part of the restoration was executed between 1739 and 1749, including the base of the steeple following the instructions of the new builder Jacinto Agusti. In 1749, the work was stopped because there was not enough money to continue.

In 1771, the Rector Mosen Joan Boix and the regents Josep Beltran and Josep Orenga of the l'Assumpcio Parish requested permission for a meeting of all people of the Parish from the authorities of Valencia. The permission was received for the 23rd of June of the same year. The purpose of the meeting was to get the citizens' money to continue with the work which had been idle since 1749.

The council ordered the two instructors Josep Estelles and Jaume Tarrega to take charge of the new work. Not in accordance with the ideas presented by the council, they followed instructor Agusti's plans. The work was finished on April 30, 1791, and on the 6th of April of 1783, on the Feast of Resurrection, the parish's priest , Mosen Domingo Villarroig, blessed the first five bells. As the blessing of bells was reserved to the Bishop, Rector Villarroig had to request permission from the Bishop of Tortosa (Tarragona, Catalunya), Don Pedro Cortes, through a document which can be found in the book of the baptisms of the l'Assumpcio Parish (Volume 6, 1778-1794. Page 65-66) for March 24, 1783, the request being answered from Tortosa three days later.

Figure 1.3: Steeple

1.2.2 Jacint Agusti i Jurado

Jacint Agusti was a village worker, born in Carlet (Valencia) from where he emigrated to the Vall d'Uixo (Castellos) after the Spanish War of Succession. The year of his birth is not known. On September 12, 1728, he got married to Teresa Castello i Sorribes, born in Vall d'Uixo. The couple had two children, Vicent and Jacint. Teresa Castello died in 1776; Jacinto Agustí died June 17, 1785.

Agustí was the author of the project of the steeple of the l'Assumpcio parish and he realized it following his own plans.

In 1749, the construction of the steeple of l'Assumcio fell idle for lack of money, and Agustí left Vall d'Uixo for a neighbouring city, Eslida (Castellon), where he worked in the construction of the parochial church. But he had some disagreements with the local council being in charge of the construction which ended in a lawsuit. He returned to Vall d'Uixo in 1766, where he is documented to be a citizen of the l'Assumpcio parish together with his family, again.

Agustí had already started building the steeple before its construction was interrupted in 1749. Thus, a part of it was already built when work was continued in 1771.

In the same year, the local council for the construction of the church had charged the builders Jaume Tarrega of Valencia and Josep Estelles of Borriana with the construction of the steeple because it considered them to be professionally more qualified than Jacint Agustí. But later, the same council opted for the project of Agustí, and work was continued without modifications, except for the addition of the superior pinnacle covered with blue tiles and gilded in the framework, an addition that was taken from the project of 1771 of Tarrega and Estelles.

Work was finished on April 30, 1791, but Agustí did not see it completed because he had already died five years earlier.

1.3 The steeple

In the foot of the outburst of the steeple's spiral staircase, some drawings were hidden which had been made by hand in the level below. These drawings were carried out with thick pencil and even with charcoal, and they represent, in a very general sketch, a part of the finished body of the steeple. The lithographic reproduction of the drawing is quite bad since it was necessary to humidify it to make it visible.

These drawings corroborate what is known about the construction of the steeple, as well about the persons in charge of the work itself as about those taking decisions on the march. In addition, they confirm that the superior bodies of the steeple are an addition to the original project.

1.3.1 Project of restoration of the steeple

The tower consists of six bodies differed by cornices. The base level of the steeple formes a square. In the second level, the four sides and the four edges of the base prism are continued by curved surfaces. The four surfaces starting at the edges of the base level become wider and wider until they form an octagon together with the four surfaces starting at the sides of the base level. Thus, the transition from the square base level to the third level, an octagon, is achieved. The remaining three levels maintain the octagonal shape of the third one.

The tower was planned to be detached from the body of the church, between the Chapel of the Communion and the church, the main front being separated, since the first pillars of the access present a more complex appearance that the rest. Later, the atrium was built, and as a consequence, the front of the temple advanced, thus leaving the tower behind. This is a hypothesis endorsed by the peculiar relationship of the steeple with the surrounding parts of the church: a narrow passage with a development in height delivering clear evidence that these proportions are not in accordance with the intents of the original design. Another curiosity of the tower is that it contains a hexagonal stairway in its first three levels, the upper ones being of octagonal shape.

The three first levels are built with ordinary masonry taken with mortars of lime, their external lining being made of ashlars of great size and very figured. The main body of bells is made of ashlars of very good quality. The upper levels show a peculiarity that gives us the impression that they are work of a different conception than the lower parts. In this case, the pilasters and the cover of each one of them presents aspects of fragility and a certain improvisation that subtract quality from the total.

The relentless passage of time for a building two hundred years of age made necessary a restoration project which was executed in 1990, just before the second centennial celebration in 1991. Before restoration was started, it was necessary to obtain an impression of the amount of damage.

On the one hand, the construction of the levels 5 and 6 made of ashlars and brick, materials which cannot be well combined so that these components have separated. In addition, the mortar between the bricks has eroded strongly, leaving the bricks practically without material of union. The consequence has been a general movement of the structure, especially of pieces of the ashlars, with increasing detachment of the mortar and filtration of water into the joints.

Another circumstance contributing to the degradation of the construction was the electrification of the bells. The change from manual movement to a mechanic one resulted in damage of the ashlars in the weakest points by the movement of the mass of the bells: the mortars of union fall off the cornices, which is followed by filtration of pluvial waters and erosion.

In the restoration process, the quality of the materials that had to be substituted was improved without altering the apparence of the steeple. These were the objectives:

- Assure the stability of the bodies
- Endow the tower with a system of accesses to the superior levels that substitute those which are ramshackle at the moment
- Protect the upper platforms
- Restore broken or missing ashlar elements and suppress elements without architectural interest.

The restoration of the upper levels was carried out by substituting the current one made of brick by armed concrete to anchor the elements of the ashlars as well as to fix the other levels and to make the whole structure more solid. The ornamental elements were erosed strongly by climatic influences. The tower was endowed with a lightning rod in order to avoid the destructive action of these meteorological phenomena. The access systems were renewed at the 5th and 6th levels by means of simple stairways that substitute the old ones. Finally, the balustrade of the body of bells was recovered.

2) THE MATHEMATICAL THEORY

2.1) Generation process

2.1.1) Three dimensional photo model

A three-dimensional photo-model is an object model where the texture information is taken from photographs or other optically working recording systems [L. Dorffner, G. Forkert, 1998].

As its name indicates, it consists of two parts. One part is the "photo" that contains the image information or the photo-texture which is transformed onto the surface patches used to approximate the object shape. The other part is the "model" that contains the geometrical and topological information describing the shape of the object surface.

Three-dimensinal photo-models need three-dimensional object models, in which the shape of the surface is stored. The 3D photo-model is obtained by using digital images. These images can be obtained directly by using a digital camera (as in our case) or, otherwise with an amateur or metric analogue camera. In this case, the photos have to be scanned off-line using a photogrammetric scanner.

One thing should be remarked: that in our task of generating a photo-model, the "clearness" is usually more important than a "high precision" of the result as far as the purpose of the 3D photo-model is not to obtain a "very accurate photogrammetric result" but a "nice 3D virtual model".

We find some advantages of a digital model:

- Data material can easily be supplemented and reconstructed because of its digital storage.
- Using some kind of animation or simulation tools, realistic presentations of the objects can be produced.
- This kind of works can be used for a further archeological and cultural-historical research.

2.1.2) Visualization: VRML

3D photo-models can be stored in the VRML format. VRML is an acronym for "Virtual Reality Modeling Language". It is the International Standard (ISO/IEC 14772) file format for describing interactive 3D worlds and objects on the Internet [Carey, 1997]. VRML can be published in 3D Web pages like a platform independent language.

Using a VRML format for the visualisation has some advantages:

1. It is quite cheap, since most of the VRML viewers are available at a free cost on the market.
2. It is easy to use; the user can move around the photo-model with the help of some tools easy to manage.
3. A nice interactive visualisation can be obtained; the user can move around the photo-model and choose nice perspectives for a further task.
4. Additional information can be added to the 3D photo-model. For instance, one can make an animation with some kind of sound of the model.
5. Measurement tools can be added by using the EIA (External Authoring Interface) [Zeisler Ph., 1999].

2.1.3) Overall generation procedure

In a first step data should be collected in the field site: control points have to be measured and photographs have to be taken (see section 4).

Once all these data are collected, they should be transferred to the computer: digital photos, control points and camera data. Then we can start with the generation of the three-dimensional photo-model. The following steps should be carried out (figure 2.1):

1. When working with the computer, the first step is the adjustment of the geodetical data collected in the field site (control points).
2. Then, measuring of control and tie points should be done in the images. Control points are the points measured in the field work and tie points are points needed to "connect" the photos.
3. Orientation of the images:

a- Approximations: we need the approximation values for the rotations and the inner orientations.

b- Hybrid photogrammetric adjustment: the parameters of both inner and outer orientations as well as the co-ordinates of the object points are determined.

c- Robust estimation: This step is necessary to find gross errors in the data. If such errors are found, the erroneous observations have to be visually inspected in the images, and the false points can be re-measured.

4. Measuring the modeling points. In the same step, the topology is created by joining these points with lines and dividing the surfaces into triangles.
5. An spatial intersection adjustment. In this step all kind of observations are adjusted at the same time.
6. Export of the geometrical model to the VRML format. A three-dimensional object is generated without the real texture.
7. Visual inspection: an 80% of gross errors are found in the geometrical model. If the geometry of the model is not good, then we have to start again with the point 4.
8. Adding texture to the geometrical object from the digital images.
9. In a final step, the model is obtained.

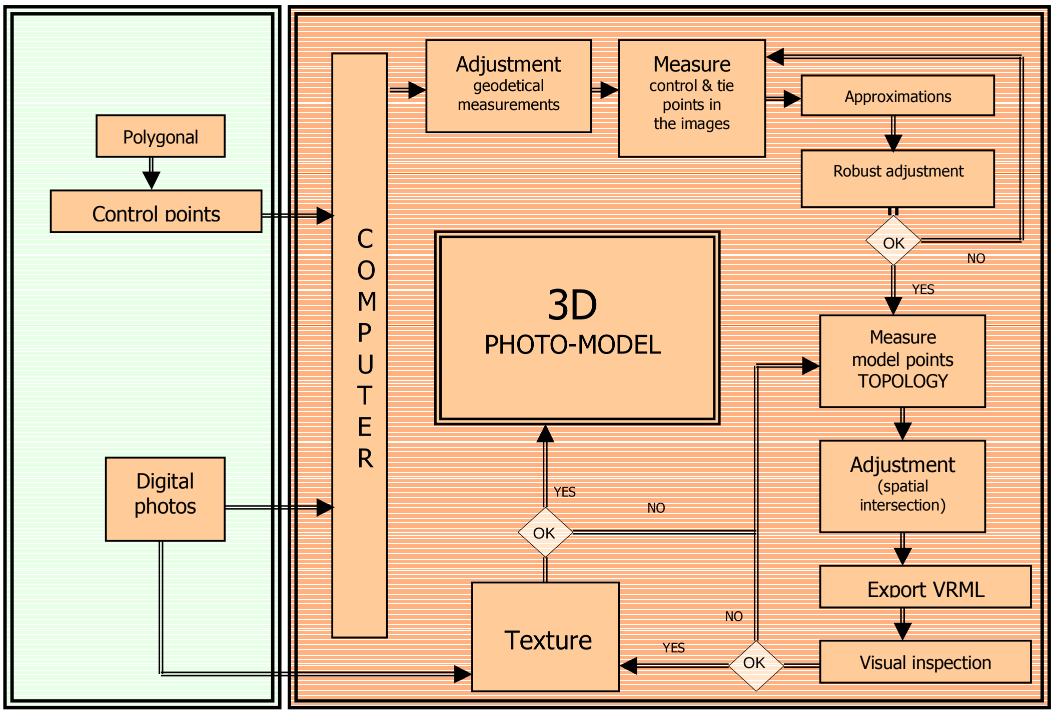


Figure 2.1: General overview

2.1.4 Field work: 3x3 Rules

When collecting data in the field work, in our case photos made with a non-metric camera, some rules must be taken in account. The "3x3 Rules" are practical rules for this purpose. They are structured in three items, consisting each one of three sub-items [P. Waldhäusl].

1. The 3 geometrical rules
2. The 3 photographic rules
3. The 3 organizational rules

Here, they are described in more detail:

THE 3 GEOMETRICAL RULES:

- *Prepare control information:* Some long dinstance should be measured between well defined points. These may be also measured some plumb-lines (figure 2.2). If geodetic equipment is available, well-distributed control points can be determined by intersection of rays. It is important to make proper sketches of these control points.

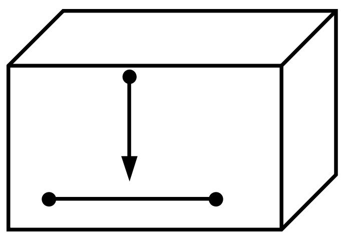


Figure 2.2: Minimum metric information: one distance and one plumb line.

- *Multiple photographic all-around coverage:* Photos of the object should be taken by an overlap greater than 50%. Try to take the photos: from the half heigth of the object; also diagonal shots; add orthogonal shots.

- *Take stereopartners for stereo-restitution:* Stereopartners are taken: 1) Normal case: base-distance-ratio 1:4 to 1:15; 2) Convergent case: base-distance-ratio 1:10 to 1:15.

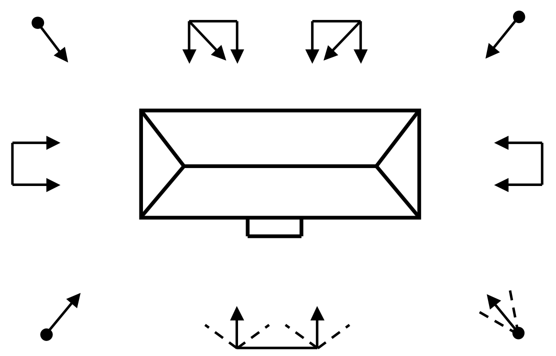


Figure 2.3: Ground plan of a stable bundle block arrangement all around a building.

THE 3 PHOTOGRAPHIC RULES

- *The inner geometry of the camera has to be kept constant:* No zooming, no shift optics and no distance changes. Use unly one distance for "ring"-photography and one distance for the close-ups.

- *Select homogenous illumination:* For this it should be choosen the best time of day. It is a good idea to use tripod and cable release for sharp images.

- *Select most stable and largest format camera available:* The best would be a camera that fullfil the following: 1) Wide angle; 2) Medium format; 3) Calibrated camera; 4) and film sucked flat.

THE 3 ORGANIZATIONAL RULES

- *Make proper sketches:* Ground plan and elevation of each side could be made in a scale from 1:100 to 1:500, depending on the dimension of the object. In this sketch, Noth direction, photo standpoints and photo directions should be marked. Also marked photo coverages of each shot.

- *Write proper protocols:* Some important data would be: main characteristics of the object, owner, address, date, camera data. Add also a short description of the place.

- *Final check:* Do not forget to write down everything immediately and check everything before leaving the place.

2.1.5 Image measurement for block adjustment

In this step the image coordinates of homologous points have to be measured. Two conditions have to be fulfilled [L. Dorffner, G. Forkert, 1998]:

- The individual object points must appear in at least three photographs for control and tie points or two photographs for modelling points (see next paragraph).
- The rays must not intersect at a narrow angles.

Three kind of points can be distinguished:

1. <u>Control points:</u> These points have good approximate positions as far as they have been measured in the "field work" using the method of intersecting rays, as explained in section of the field work. They are well-defined points and they are expected to have good accuracy in the final adjustment.

2. <u>Tie points:</u> These points have not been measured in the field-work, but they are required to fill up areas without control points. With the control and tie points all together there should be about eleven or twelve points well distributed in each photo; there should be at least three rays for each point to make gross erros detectable and they should be well-defined points. They are also expected to obtain small r.m.s.errors in adjustment.

3. <u>Modelling points:</u> These are points required for defining the shape of the object. Often they are not well-defined in the photos because the points significant for the model have to be measured although they are sometimes not well seen in the images, therefore they have to be assigned larger a priori r.m.s.e.

The process of both control and tie points measurement can be made manually, directly in the digital images by using some digital photogrammetric plotting software such as, in our case, the digital muli-image mono-comparator ORPHEUS [Zischinsky et al., 2000].

2.2 Hybrid photogrammetric adjustment

2.2.1 Bundle block adjustment:

During this bundle block adjustment process all kind of image observations are adjusted:

- Control point co-ordinates (stations 101 and 102 to define the co-ordinate system),
- polar observations,
- observed rotation parameters (the levelling of the theodolite): "observed parameters",
- image co-ordinates.

In the functional model the expectation of *p*, *E(p)*, is a function *f* of the unknown parameter sets p_0, adp, P_0, θ, and *P*:

$$E(p) = p + v = f(p_0, adp, P_0, \theta, P)$$

Equation (1): Functional model where: $p=(x,y,z)^T$ is the observed point; *v* is the vector of residuals; $p_0=(x_0,y_0,z_0)^T$ is the interior reference point; *adp* are the additional parameters; $P_0=(X_0,Y_0,Z_0)^T$ is the exterior reference point; $\theta=(\alpha,\zeta,\kappa)^T$ are the three rotation angles for terrestial potographs; and *P=(X,Y,Z)* is the object point [F. Rottensteiner,2000].

All the parameters contained in the functional model can be determined by adjustment. If the functions f in equation (1) are non-linear, they have to be linearised. The linearisation of this equation is made by using Taylor series. For that purpose, approximate values ($\vec{x}_0$) for the unknowns ($\vec{x}$) are required:

$$f(\vec{x}) = f(\vec{x_0}) + \sum \left(\frac{df}{dx_i} \cdot (\vec{x_0}) \cdot \delta x_i \right)$$

Equation (2)

Where $\vec{x} = (x_1,.....,x_i,....,x_n)^T = \vec{x}_0 + \delta\,\vec{x}$

Thus, the linearised model is archived where f are the observations and A contains the parcial derivation of *f*.

$$\vec{l} \mp \vec{v} = A\vec{x} + f(\vec{x}o)$$

Asuming teh observations to be uncorrelated and distribuded with standard desviation σ_i, the weigth $p_i = \frac{S}{S}$ is assigned to observation i. Using the weigth matrix P = diagonal (p_i), the maximum likelihood principle leads to the following solution:

$$\vec{X} = (A^T PA)^{-1} A^T P\vec{l}$$

The a posteriori r.m.s.e of unit weigth can be computed from:

$$S_{0\ a\ post}^{2} = \pm\sqrt{\frac{\vec{V}^T P\vec{V}}{red}}$$

Where red= Number of observations-Number of unknowns, is the redundancy. The variance-co-variance Matrix Q_{xx} of the unknowns can be computed from :

$$Q_{XX} = S_0^2 (A^T PA)^{-1}$$

The r.m.s.e of unknowns x_i is then observed in the diagonal element Qxx_{ii}:

$$m_{xi} = \pm\sqrt{Qxx_{ii}}$$

2.2.2 Observation types

The basic formula relating the observed point p to the object point P is given by the spatial similarity transformation [F. Rottensteiner, 2000]:

$$M \cdot [p - p_0(adp)] = \lambda \cdot R^T(\theta) \cdot (P - P_0)$$

Equation (3): Spatial similarity transformation were: λ is the scale factor between the observation and the object coordinate systems; $R^T(\theta)$ is a transposed 3x3 rotational matrix computed for the three rotational angles θ; M=diag(m_x,m_y,m_z) is a mirror matrix containing the mirror coeficients $m_i = \pm 1, i \in \{x, y, z\}$ for the x, y and z axis: in our case, M=I (the unity matrix).

2.2.2.1 Observed image points:

Figure (4) shows a perspective image and the relation between the image coordinates x and y of a point p and the global coordinates X, Y and Z of a point P. The reference point P_0=p_0 is the projection centre or the camera standpoint.

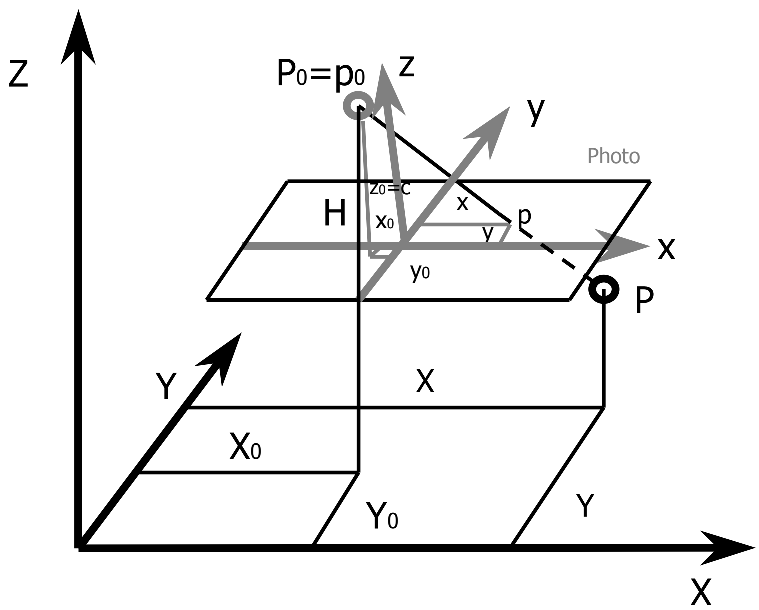


Figure 2.4: Central projection

The following equation shows, for any image point, the observed image coordinates $\bar{x}, \bar{y}$ together with their corrections v_x, v_y as functions of the free and fixed parameters:

$$x = \bar{x} + v_x = x_0 - c\frac{r_{11}(X - X_0) + r_{21}(Y - Y_0) + r_{31}(Z - Z_0)}{r_{13}(X - X_0) + r_{23}(Y - Y_0) + r_{33}(Z - Z_0)}$$

$$y = \bar{y} + v_y = y_0 - c\frac{r_{12}(X - X_0) + r_{22}(Y - Y_0) + r_{32}(Z - Z_0)}{r_{13}(X - X_0) + r_{23}(Y - Y_0) + r_{33}(Z - Z_0)}$$

Equation (4): $(\bar{x}, \bar{y})$ are the observed image coordinates; (v_x, v_y) are the corrections; *c* is the focal lenth; (X_0, Y_0, Z_0) are the coordinates of the interior reference point; (X, Y, Z) are the coordinates of the object point; r_{ij} are the parameters of the rotation matrix.

These equations should be linearisated for an adjustment of indirect observations.

The systematic phenomena disturbing the strict central perspective may be formulated mathematically as functions of the image coordiantes (x,y). This is made by changing the interpretation of the inner orientation. The principal point point is substituted by the equations:

$$x_0 := x_0 + dx_0 = x_0 + dx_0(adp\ x, y) = x_0 + \sum(a_i \cdot dx_{0i}(x, y))$$

$$y_0 := y_0 + dy_0 = y_0 + dy_0(adp\ x, y) = y_0 + \sum(a_i \cdot dy_{0i}(x, y))$$

Equation (5):Principal point were: (dx_0, dy_0) have the meaning of a shifting of the pringcipal point (x_0, y_0)

The coeficients a_i plays the role of aditional parameters *adp* in equation (1). These parameters describes the surface in the observation coordinate systeme [F. Rottensteiner, 2000]. Each of the elementary functions (dx_{0i} (x,y), dy_{0i} (x,y)) describes a characteristic distortion phenomenon; The following table contains the elementari functions implemented for $i \in [1,6]$ (in our project we used until $i = 4$; see section 3.2):

I	dx_{0i} (x,y)	dy_{0i} (x,y)	Geometric meaning
1	0	x	Affinity- skewness of axes
2	0	y	Affinity- scaling of y-axes
3	x (r^2-1)	y (r^2-1)	Radial distorsion; 3. degree
4	x (r^4-1)	y (r^4-1)	Radial distorsion; 5. Degree
5	r^2+2x^2	2xy	Tangential (asymmetric) dist.

6	2xy	r^2+2y^2	Tangential (asymmetric) dist.

Table (1) : Elementary functions were: $r^2 = x^2 + y^2$; $x := x_{image} / r_0$; $y := y_{image} / r_0$; x,y are normalized reduced image coordinates; r_0 is the normalization radius. (Note that for r=1, the radial terms yield 0)

The user is free to decide which of those elementary functions should be applied.

2.2.2.2 Observed polar points:

Figure (5) shows the relationship between the polar and the cartesian coordinates: The polar coordinates α, ζ and s of various points are measured from a particular standpoint.

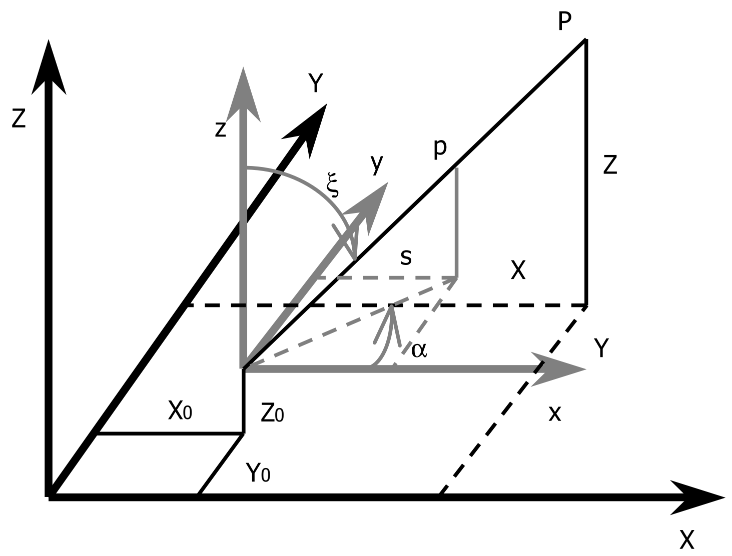


Figure 2.5: Polar points

The figure shows these observation parameters for a point p and the associated point P in the global XYZ coordinate systeme. The scale factor λ need not necessary to be 1, so a scale correction of the distance measurement can be incorporated in the adjustment. The standpoint is chosen as the reference point P_0 or p_0. Free stationing is possible because P_0 is not necessary to be a known point in the global coordinate system.

In equation (6) the relations between the polar coordinates α, ζ and s and the local cartesian coordiantes x, y and z are described:

$$\begin{pmatrix} x \\ y \\ z \end{pmatrix} = s \begin{pmatrix} \sin\zeta\cos\alpha \\ \sin\zeta\sin\alpha \\ \cos\zeta \end{pmatrix}$$

Equation (6)

These cartesian coordinates can be considered as observed coordinates in a three dimensional local coordinate system and introduced into the adjustment (see equation 1).

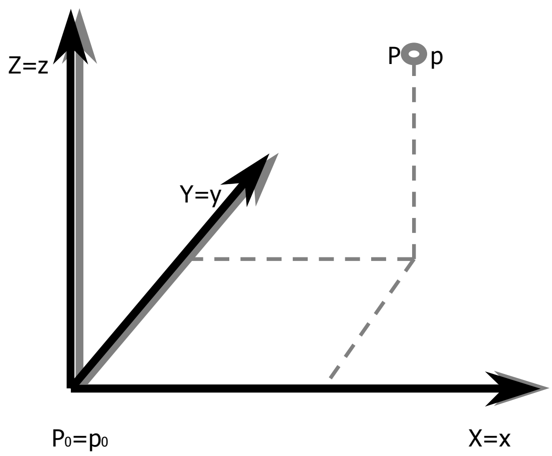
However α, ζ and s are measured. Equation (6) should be transformed by refining the functional model. After some operations we obtain three equations in the following form [Kraus et al., 1997]:

$$v_\alpha = f_\alpha(\alpha,\zeta,s,P_0,P,\theta)$$
$$v_\zeta = f_\zeta(\alpha,\zeta,s,P_0,P,\theta)$$
$$v_s = f_s(\alpha,\zeta,s,P_0,P,\theta)$$

Equation (7): v_α, v_ζ, v_s are the corrections to the polar coordinates; *α,ζ,s* are the geodetical measurements; *P=(X,Y,Z)* is the object point; $P_0=(X_0,Y_0,Z_0)$ are the global coordinates of the polar stand point; $\theta=(w,y)^T$ are the three angles for the rotation matrix.

2.2.2.3 Observed control points

The three coordinates XYZ of the control points are not treated as fixed parameters in a refined



adjustment. This is due that they are derived from observations, so they should have a limited accuracy.

Figure 2.6: Observed control points

In figure (6) the geometry of the observed control points is shown. In the following equation, were the scale factor λ = 1, the reference points $X_0 = x_0 = 0$ and the rotation matrix R is equal to the unit, the relations between the given control point coordinates $(\bar{x}, \bar{y}, \bar{z})$ and the corrected control point coordinates after the adjustmetn (X,Y,Z) are shown:

$$x = \bar{x} + v_x = X$$
$$y = \bar{y} + v_y = Y$$
$$z = \bar{z} + v_z = Z$$

Equation (8)

2.2.3 Photo orientation

2.2.3.1 Approximations:

As we have seen section 2.1.3, in photo orientation, the first step is to obtain approximations for the orientation parameters. In the program system ORPHEUS, this can be made either by using the algorithm of "Spatial resection according to Müller/Killian" or by graphical or numerical imput of the rotation matrix.

SPATIAL RESECTION ACCORDING TO MÜLLER/KILLIAN:

The geometry of a spatial resection is shown in figure (7):

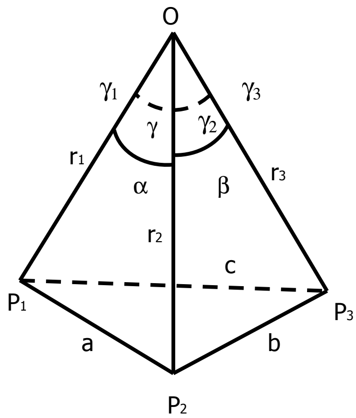


Figure 2.7

The three object coordinates (XYZ) and the two image coordinates (x,y) of the points P_1, P_2 and P_3 are known. The unknowns are the three coordinates X_0, Y_0 and Z_0 of the projection center of the camera and the three rotational angles, e.g., (ω,φ,κ).

First, we should determine the lengths of the edges r_1, r_2 and r_3 of the tetrahedron. With these values, it is possible to compute the coordinates X_0, Y_0 and Z_0 as the intersection of the three spheres with centres P_1, P_2 and P_3.

To compute the lenth of these radii we can use the cosinus therorem:

$$r_1^2 + r_2^2 - 2r_1r_2\cos\alpha = a^2$$
$$r_2^2 + r_3^2 - 2r_2r_3\cos\beta = b^2$$
$$r_3^2 + r_1^2 - 2r_3r_1\cos\gamma = c^2$$

Equation (9)

From these three equations we obtain a four degree equation with the unknown $\delta = r_2/r_1$:

$$a_4\delta^4 + a_3\delta^3 + a_2\delta^2 a_1\delta + a_0 = 0$$

Equation (10): a_i are function of the spatial lengths *(a,b,c)* between the three points *(P_1,P_2,P_3)*, of the radii *(r_1,r_2,r_3)* and the angles *(α,β,γ)* of the tetrahedron.

To solve this equation, we can use the solution given by Killian. It consists of an introduction of a fourth point P_4. Following the same steps as before, another fourth-degree equation can be derived from the points P_1, P_2 and P_4 for the same unknown $\delta = r_2/r_1$. By an elimination process, this unknown can be computed from the two equations. Therefore, with the values of the radii, we can compute the coordinates X_0, Y_0 and Z_0 of the requested projection center [K. Kraus et al, 1997].

GRAPHICAL OR NUMERICAL IMPUT OF THE ROTATION MATRIX:
There is a possibility to input the rotation matrix graphicaly or numericaly in ORPHEUS. Equation (3) can be re-arranged as:

$$(P - P_0) \propto R * (p - p_0)$$

Equation 11: where α means proportional

Assuming that $(p - p_0) = (1,0,0)^T$ in equation (11) results in $(P - P_0) \propto i$ (equal for the other columns of the rotation matrix). Therefore, if the directions of the basis vectors of the observation coordinate system in the object coordinate system are known, the columns of the rotation matrix can be computed directly by performing a normalization. As the rotation matrix is an orthonormal matrix, only two of the three vectors are requested, the third one can be computed as the cross product of the other two.

It should be done in the following way: The direction of two column vectors can be input by writing down their components and applying the orthonormalisation. Then, all vectors will be normalised, and rectangularity between them will be enforced. ORPHEUS additionally offers the possibility to digitize the components graphically.

2.2.3.2 Detection of gross erros:

Gross errors in the data are observations that do not fit to the stochastic model of adjustment. If this happens, it may be due to two reasons:

- The observations are wrong.
- The stochastic model is wrong.

In the first case, there are three possibilities to detect them:

1. ANALYSIS OF RESIDUALS: Observations obtaining large residuals are suspicected to be errors. These kind of observations can be excluded. This technique should only be applied with respect to very gross errors, i.e. errors of a size that prevent convergence of adjustment because errors statistics can be inspected after adjustment. The most typical errors preventing convergence of adjustment are:

- Point numbering errors: two different points that have the same identifier.
- Wrong approximations, specially for rotation parameters or for the focal length: in this case, linearisation is performed with too crude approximations, and the system diverges.

2. ROBUST ESTIMATION: This error detection technique is well-suited for medium-sized gross errors. There is a method of re-weighting all observations before each iteration and modulate the new weight by a function W_i of the normalised discrepances of the previous iteration. In this case, the suspected observations are given smaller weights, therefore they will have less influence as iterations continue. On the other hand, they might be rehabilitated if another observation also gets less and less influence.

$$W_{i,n+1} = W_i \cdot \frac{1}{\left[1 + \left(\frac{d_{i,n}}{h}\right)^4\right]^2}$$

Equation (12): Once the convergence has been done with the originall weights W_i, iteration will start again with the weight $W_{i,n+1}$ of observation *i* in adjustment *n+1* being modulated depending on the size of the normalised residual $d_{i,n} = \frac{r_{i,n}}{\sigma_i}$ of that observation in iteration *n*. Parameter *h* is the size of a normalised residual [F. Rottensteiner, 2000].

Choosing an adequate value for h is necessary for that method to work. This parameter is usually selected as a bit smaller than the greatest normalised residual and set $W_{i,n+1}=0$ for $d_{i,n}>h$. Adjustment is repeted several times, reducing at each step h until the desired threshold is reached (usually until h=3).

3. DATA SNOOPING: For the reliability control we can use "data snooping", a test with the normalised corrections. With data snooping the program ORIENT is able to search and identify gross point errors. This theory is based on the assuption that there is only a single gross error in the observations and that the linearisation of a possibly non-linear adjustment has no significant effect. The search for multiple gross errors is therefore best conducted by repeating the

adjustment, including linearisation, after eliminating the first gross error in the data, so as to find the second gross error, and so on [K. Kraus, 1997].

2.3 Topological modelling

Again more points have to be measured in the images. This time more emphasis was laid on the relevance of these points for modelling, so they are not usually well defined in the photos as they are sometimes situated even in an intersection of two planes that is not seen in the image but is necessary for the modelling of the object shape. These are the so called "modelling points" and are expected them to have a greater r.m.s.e. a priori (see section 2.1.5).

This additional points used for modelling the church are situated at the corners of a plane of the object or at the edges of an intersection of two or more planes.

In addition to point measurements, the connections between points for the definition of lines and surfaces of the photo-model are also fixed. This topological information must be stored alongside the point identifiers and coordinates in the data set [L. Dorffner et al., 1998].

Therefore these points are joined by lines that represent the intersections or the edges of one or several surfaces. Curved surfaces can be aproximated by planar surface paldes, too (figure 2.8).

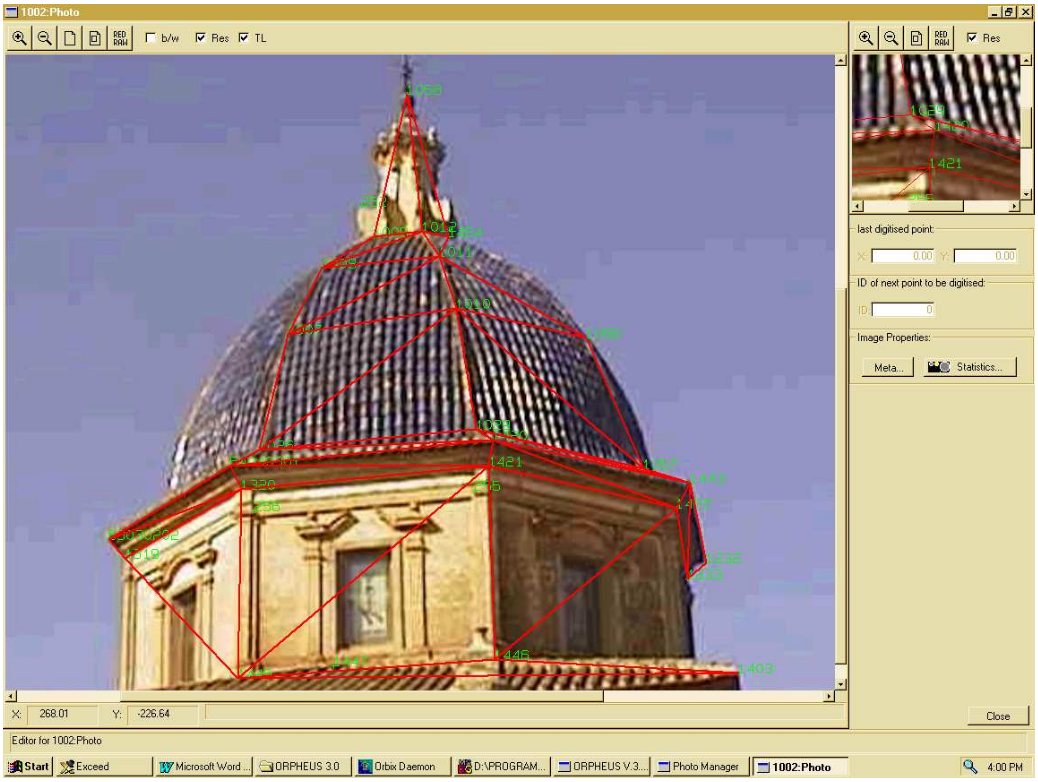


Figure 2.8:

Before the model is generated, more additional lines are requested to divide all the surfaces into triangles. In this procedure several conditions need to be fulfilled [T. Zischinsky et al., 2000]:

1. The whole object has to be covered by the triangles (there must not be holes).
2. These triangles must not intersect.
3. The triangles must be defined in a way that for each triangle there is at least one photo where all its corner points are visible.

Once these conditions are fulfilled, the program can automatically find these triangles and the 3D modell can be generated. This is made easily by the program. For the visualisation of the model, data can be exported from ORPHEUS to a VRML format that can be viewed in Internet.

2.4 Creation of the 3D model

2.4.1 Creation of the geometrical model

The geometrical model was converted to VRML format by using ORPHEUS. Thus the 3D model could be visually inspected by using a VRML viewer, and the geometry of the object was checked. Some of the most common errors we found in the model geometry were the following ones:

1. Holes in one surface: due to some ficticious line missing that should divide a rectangular surface into two triangular ones (see section 2.3).

2. False triangles: This is due to the generation of wrong triagles. As the topological properties of the object are stored alongside the object co-ordinates (in the "reference system"), they are not changed if points are deleted in the images because in the images, only views of the topology are presented. However, deleting a point in all images might result in "ghost triangles" which still exist in the object but are not depicted in any of the images.

3. Singular points: this is due to a point or a couple of points that have not been measured in enough photos so that the program can not calculate its coordinates. These points are named "singular points" and they should be re-measured in more photographs to let the program calculate their coordinates by spatial intersection.

2.4.2 Adding photo-texture

In a final step, texture must be added to the 3D photo-model of the church. For this purpose we used the program PHMOD.

First, for each triangle, the "optimal" photo has to be found. This is done by evaluating the intersection angle of the surface normal of the triangle with the viewing directions of all photographs where all three corners of the triangle are contained. The photo having the smallest angle of intersection (i.e. the one viewing the triangle "most orthogonally") is chosen.

The photo-texture of each triangle surface is computed by the program. To transform the texture information of the original photographs onto the object model, a local coordinate systeme is defined for each surface patch [L. Dorffner].

This local xyz-systeme is defined in the following way (figure 9): The x-axis alongside the longest side 1-2 of the triangle is selected. The unit vector **i** is the normalized vector inside 1-2. The normal vector **k** along the z-axis is obtained as the following product:

$$\vec{k} = \frac{\overrightarrow{12} \times \overrightarrow{13}}{\left|\overrightarrow{12} \times \overrightarrow{13}\right|}$$

Equation (13)

And the unit vector **j** along the y-axis is computed as the following vector product:

$$\vec{J} = \vec{k} \times \dot{i}$$

Equation (14)

Each surface patch is defined in the global coordinate system. This is made by the global coordinates of the origin of the local coordinate system and the spatial rotation matrix R = (i, j, k).
$X=X_1+R_x$

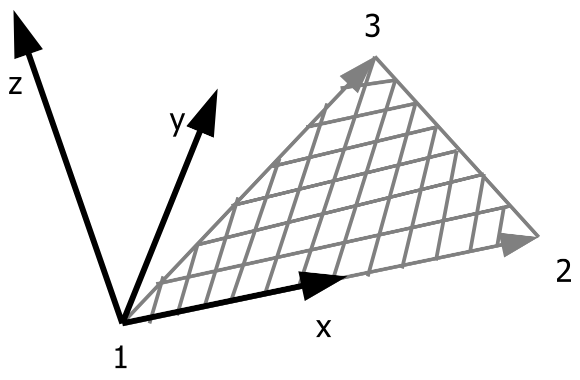


Figure (9)

In the xy-plane of the local coordinate system a very dense two-dimensional square raster of texture-elementes (=texel, as proposed in Kraus et al., 1997) is defined. These two-dimensioal square rasters are then spread over the inclined triangles with spatial layouts. Such plane can be bounded by more than three points.

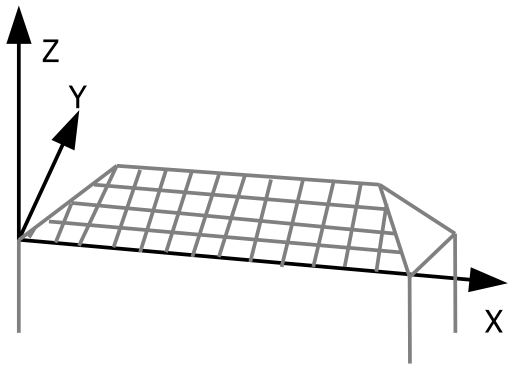


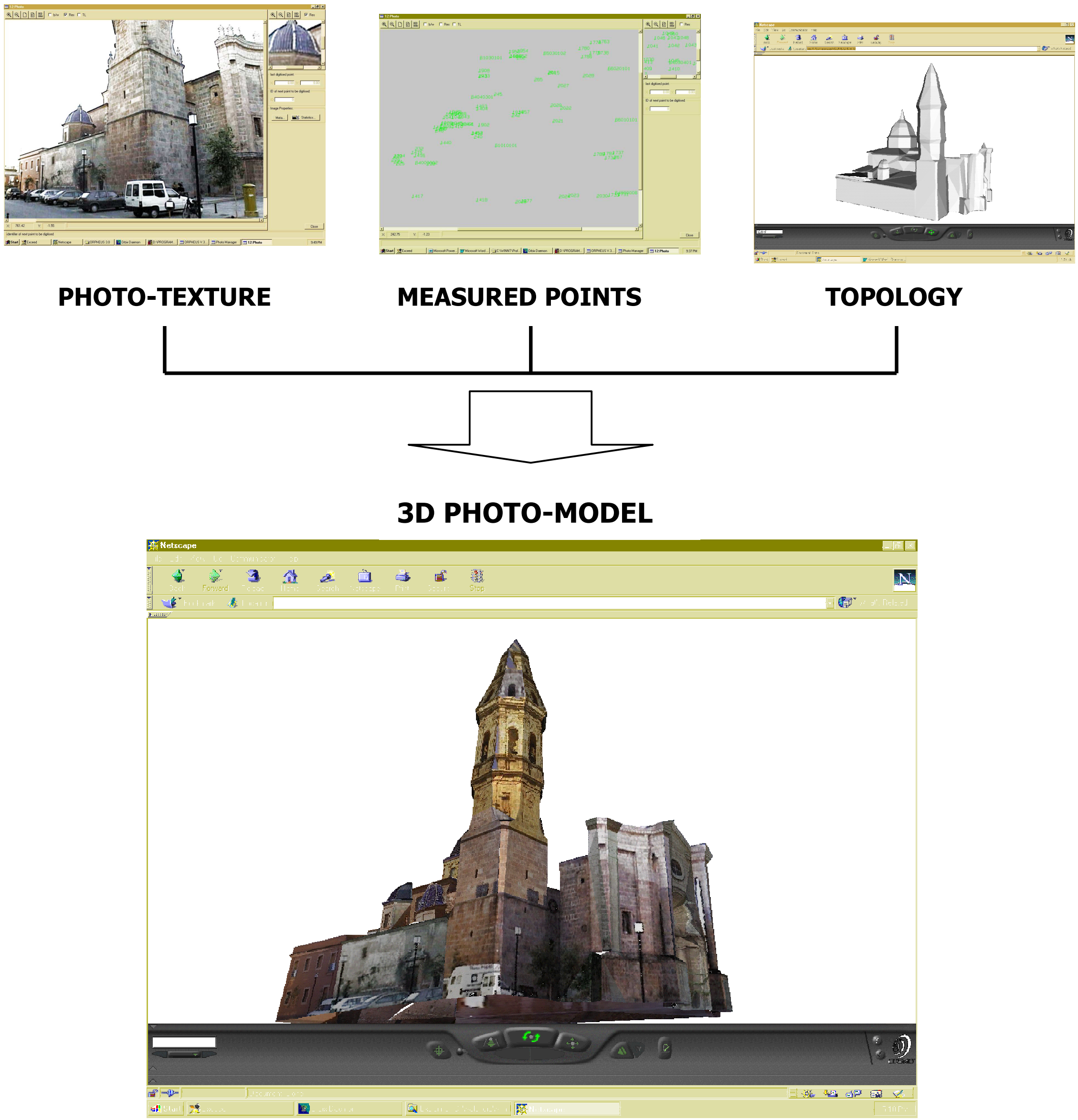
Figure (10)

The square raster is also laid out upon curved partially surfaces that can be developed. Non-developable surfaces are approximated by a polyhedron.

The raster co-ordinates of each texel (x,y) first are transformed to object space using the shifts and rotations described above, thus obtaining the object co-ordinates (X,Y,Z) of the texel. The object point is transformed to the digital image where ist image co-ordinates are (x_i,y_i). The grey level interpolated at position (x_i,y_i) is then assigned to the texture element (x,y) of the surface patch.

When all surfaces of the three-dimensional surface model are fully covered by texels, the photo-texture of the real world has been transfered into the computer. We have obtained a virtual reality furnished with photo-texture [Kraus at al., 1997].

Here it is shown an exemple of a 3D photo-model:



3. EQUIPMENT

A total station was used to realise the polygon consisting of 13 stations around the church. A reflexion prism was used as complement to measure distances. The characteristics of the total station used for the polygonal are:

- GTS-303
- Accuracy: 10”
- Sensibility: 30”

The digital photos have been taken using a digital camera Canon Power Shot 600.Its characteristics are:

- Colour image: 570000 pixel, CCD Sensor
- Size of images: 832x608 pixels in three bands
- Focal length: 50 mm

The focal length was too long for our purposes because the facades of the church are rather high and because there was no space to move further away from the facades. For that reason, another objective had used, a wide angle objective:

- Wide Converter: WC-PS28

4. FIELD WORK

The field work was made in seven days. It was be divided in three parts:

- Polygon
- Control points
- Digital photos

POLYGON

The closed polygon consists of altogether 13 stations distributed in a circle around the church starting from the station situated at the left side of the main front. The average distance between two consecutive stations is 12m. A reflexion prism was used for observing the distances. The stations were given point identifiers between 101 and 113.

Two measurements: were taken the zenith angle (vertical angle) and the azimut (horizontal angle). The rule of Bessel was used It consist of taken two visuals, a first one called direct circle (DC) and another one called indirect circle (IC) rotating the objective half the horizontal circle and a whole turn for the vertical circle. Then, is another visual taken which the difference from the first one being 200^{gon} for the horizontal angle and the vertical angle adding up to 400^{gon}. This increases will be not exact, there will be an error: ε. This rule is used for finding the medium value of both visuals.

- horizontal visual: $IC - DC = 200^{gon} \pm \varepsilon$

$$\text{Correct visual} = DC \pm \frac{1}{2}\varepsilon$$

- vertical visual: $DC + IC = 400^{gon} \pm \varepsilon$

$$\text{Correct visual} = DC \pm \frac{1}{2}\varepsilon$$

The distances between two following station points were measured two times, one from each station to obtain the average value.

A local co-ordinate system was established. Station 101 was arbitrarily chosen to obtain the fixed co-ordinates (100,100,10). By that, the shifts of the co-ordinate system were determined. The Z co-ordinate of the local co-ordinate system was forced to be vertical by defining the Z axes of the theodolite systems to be paralels to the local co-ordinate system, and the third rotation of the local co-ordinate system was determined by just fixing the Y co-ordinate of station

102 to the (again, arbitrary) value of 100m. The scale of the local co-ordinate system is identical to the scale of the measured distances. Thus, the first edge of the polygon between stations 101 and 102 is parallel to the X-axis of the local co-ordinate system. The adjusted co-ordinates of all the stations are listed in the appendix. Figure 4.1.

CONTROL POINTS

All control points were observed from two different stations, and their positions in the local co-ordinate system were determined by the method intersection of rays. Using this method, a total of 87 control points were determined in the four fronts, the steeple, and the domes. The control points were given identifiers ranging from 200 to 300. In order to be able to make a ground plan of the church, 19 additional points (points 301 to 319) situated on building corners were measured. The co-ordinates of all these points are listed in the appendix.

DIGITAL PHOTOS

A total of 70 photographs of the church were taken using the digital camera described above with the wide-angle objective mounted to it. The focal length of the wide-angle objective was unknow. We did not use all of the 70 photographs because some of them were just repetitions of others. In the end, only 39 of them were used. However, as one of the corners of the back facade was only visible in one image and for some other reasons, it was necessary to take 7 additional photos, this time without the wide-angle objective. Thus, the second series of images had to be assigned a different focal length. In order to model the steeple and the domes which are rotationally symmetrical, 22 photos of the first series could be added to the project several times, each time using different parameters of outer orientation, so that these parts of the church could be modelled completely although they were only visible from one side. Thus, the total number of photos used in the project is 68, 22 of them being just copies. Figure 4.2.

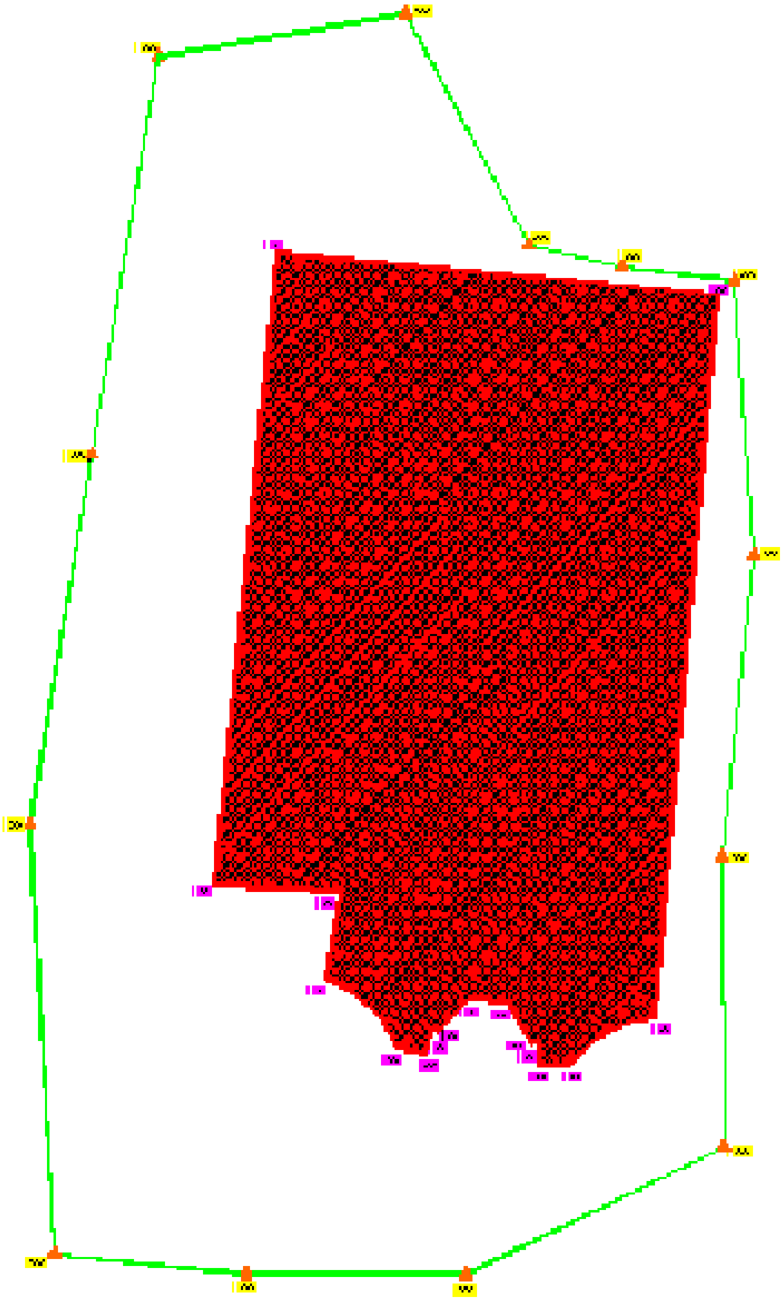


Figure 4.1

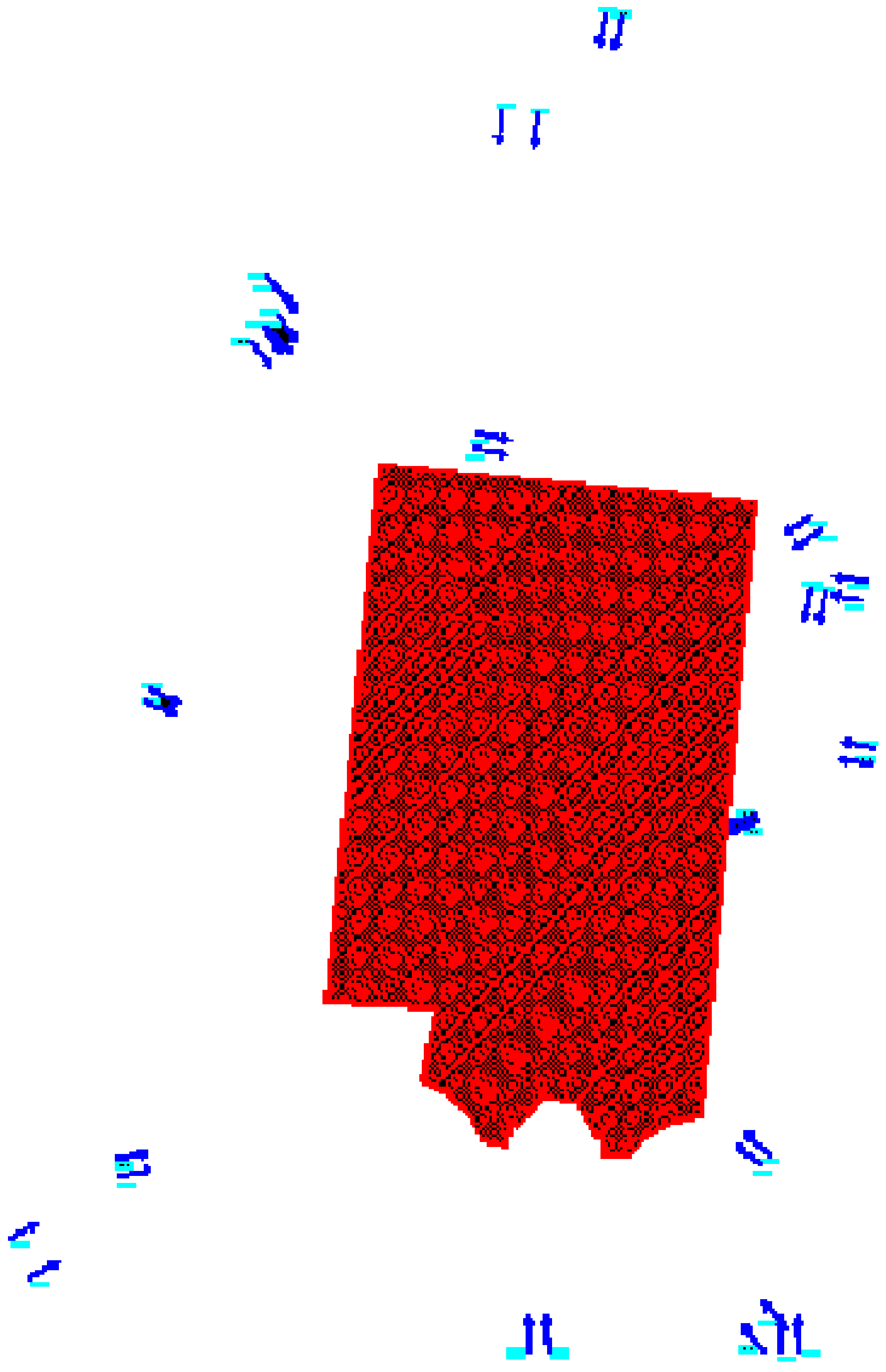


Figure 4.2

5. LABORATORY WORK

The first step was the adjustment of the nineteen points of the polygon with Orient. We had to put up the theodolites several times in the station points because control points were measured separately from the polygonal. We identified this stations from 401 to 413. We tried to adjust all the stations at the same time but the result was not good because we only had bad approximations for the orientation angle. The second one was started measuring the stations 13,1and 2. When these were adjusted they were fixed and the station 3 and 12 were calculated. The process followed with number 4 and 11; 5, and 10;6 and 9; 7 and 8.We found that we had commeted gross erros in the field, estimation tunned and to be necessary (section 2) The robust adjustment was repeated several times until we could obtain a factorn of 5 without eliminating more than the 3% of the observations. This means that the largest residuals still contained in adjustment were smaller than 5 times the r.m.s error of the respective observation. First, an a priori r.m.s.e of 0.015^{gon} for the observed angles and 0.005m for the observed distances was used. But it has to be changed: 0.02 0.02 and 0.008. Robust adjustment was repeated until we obtained a factorn of 7,2 3.58% of the observations were eliminated.

All the digital photographs had to be introduced in Orpheus to start with this program. The photos were in .JPEG format and they had to be converted to .TIFF format using the utility program converting:

>convertimg –f 01.jpg –o 01.tif –s 1

The photos were identified from 1 to 70. They had not fiducial marks. There were two co-ordinate system in which digital photo:

- Pixel co-ordinate system: x “y” negative
- Camera co-ordinate system. In our case, this system is identical to the abow one. F=50mm $\cong$ 1200 pixels $\approx$ 40 μ

  After that it was necessary measure control and tie points in the digital images. We had to check the positions of some control points, change or delete them with regard to their accuracy obtained in the adjustment. The different points of view of the photos made that sometimes measuring the points was difficult.

The following step was the orientation of the photographs.

We needed aproximations for the orientation parameters, especially for the inner orientation (i.e. the principal point and the focal length) and the rotation angles. Howing no information about the pixel size of our camera, we estimated the focal length to be 200 pixel. The principal point was approximately positioned in the centre of the digital images. As enougth control points were observable, we used the method of Müller-Kilian for obtaining approximations of the rotations. As these approximations are, hopefully, relativaly good, and because we do not yet have approximation values for the tie point co-ordinates, adjustment is performed in several steps, introducing one group of parameters after the other as unknowns:

- Determine projection centre and object co-ordinates.
- Determine rotations, too
- Determine IOR+distorsion

In order to mede the inner orientation determinable, we introduced observations for the co-ordinates of the principal point. However, problems were encountered: adjustment fid and converge for three reasons:

1. there were gross errors in our data: some control points were identified in the field work.
2. Our approximations for the focal length was completly wrong.
3. In some photos, we still had a very bad configuration of the control and tie points.

Thus, we first continue measuring tie points. A total of 76 tie points were measured in the 39 photos. They were numbered GRRCCNN, when by eight numbers starting by 6 plus the front number followed by six more numbers which go by pairs with reference to the division of the front. The first pair for columns and the second one for rows. We repeated the process of providing approximations for the rotations, this time using the interactive option. The visual inspection of the residuals using ORPHEUS gave the idea that our focal length could be wrong. After eliminating a numbering error in one of the control point, it was possible to archive convergence in the adjustment of a single photo depiching one of the corners of the church. As the control points in this photo were well distributed in the sense that they were not in a plane, focal length could be determined in adjustment to be about 600 pixels. Using this new (and much better) estimate for the focal length as our approximations, we could repeat spatial resection according to Müuller-Kilian which, this time, worked better, and adjustment of all the images converged rather quickly.

The following adjustment was by robust adjustment. It was rather difficult and lengthy. After several tries we obtained a weight of 14,9; 40 marked; a sigma0 of 1,57.

Note that our camera was a non-metric one, the parameters of the inner orientation (principal point, focal length) as well as those describing camera distorsion (the polynomial coefficients) had to be determinated on the job by adjustment, too.

To obtain the topology was necessary to measure model points. We started to measure model points in the first 39 photos. After adding the last 7 photos we had to measure control and tie points to orient these photos. There were a total of 746 model points which defined the topology by an adjustment of spatial intersection. As these photos were taken using another abjective, we had to determinate a second part of camera parameters, i.e. inner orientation parameters.

Figure 5.1:Main front

Due to the height of the tower and its situation, it was not possible to take good photos of it. We only were able to take orthogonal and close enough photos with acceptable resolution of the steeple from its side corresponding to the left facade of the church.

The same problem we had with the big dome: good photos could be taken from the left side of the church.

What seemd to be a great problem for the modelling had a rather simple solution: we made use of the symmetry of the tower and the big dome to complete the geometry of them in modelling. For this purpose we had to insert again the “good“ photos several times into ORPHEUS, each time using different photo identifiers in order to avoid mistakes in the program.

For the church we inserted the photos 1004, 1005 and 1006 three more times. For the big dome we inserted the photo 1002 four more times. Figure 8 shows a sketch with the parts that the photos covered.

We had to make sure that the new photos had enough overlap with the old ones to have the requested points in common to make the orientation of the images. Because the fact that when this new photos were inserted the old ones had already been oriented and its points had already good approximate values, we tried to orientate the new ones using the algorithm of Müller/Kilian.

This was possible with the steeple because there were enough points in common, but not for the big dome: the photo 10002 could not be oriented in this way; when making the adjustment in ORPHEUS only with the "Shifts", a singularity appeared at the position of the camera of this photo at its three coordinates X_0, Y_0 and Z_0. Therefore we had to make the orientation in ORIENT, photo by photo, and a final adjustment with the shifts and the rotation parameters all together.

To visualise the 3D model is necessary export the data by VRML format on the Internet and visualise it on the platform. The process was long because the there were found a lot of gross errors in the most difficult parts of the church: the steeple the domes and the main front. It was necessary change model points and adjustment repeat for several times. We also had to change the stadistical model during the compulations. Finally, we used the following a priori r.m.s.e farther:

$S\alpha = \pm 0{,}02^{gon}$ $S\xi = \pm 0{,}02^{gon}$ $S\delta = \pm 1{,}5$ cm

$S_{x,y} = \pm$ 0,5 pixel (tie and control points)

$S_{x,y} = \pm 2{,}0$ pixel (model points)

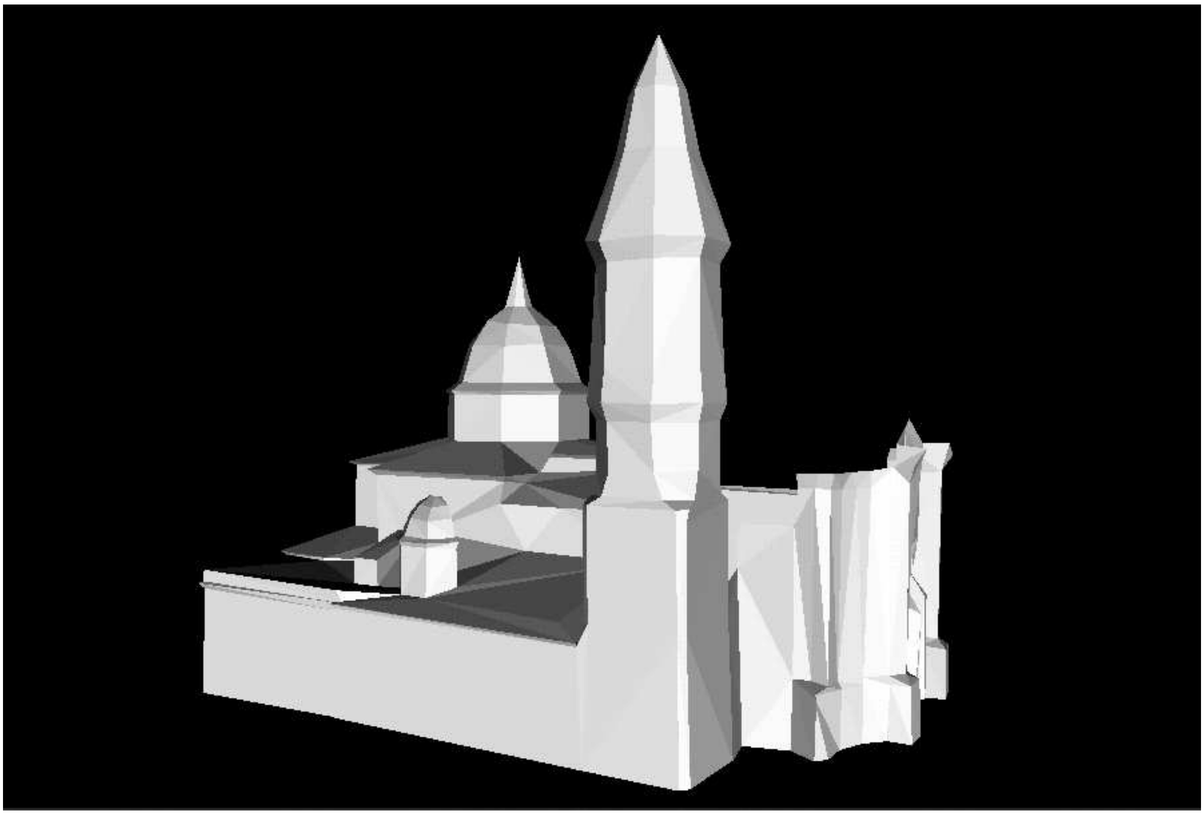


Figure 5.1

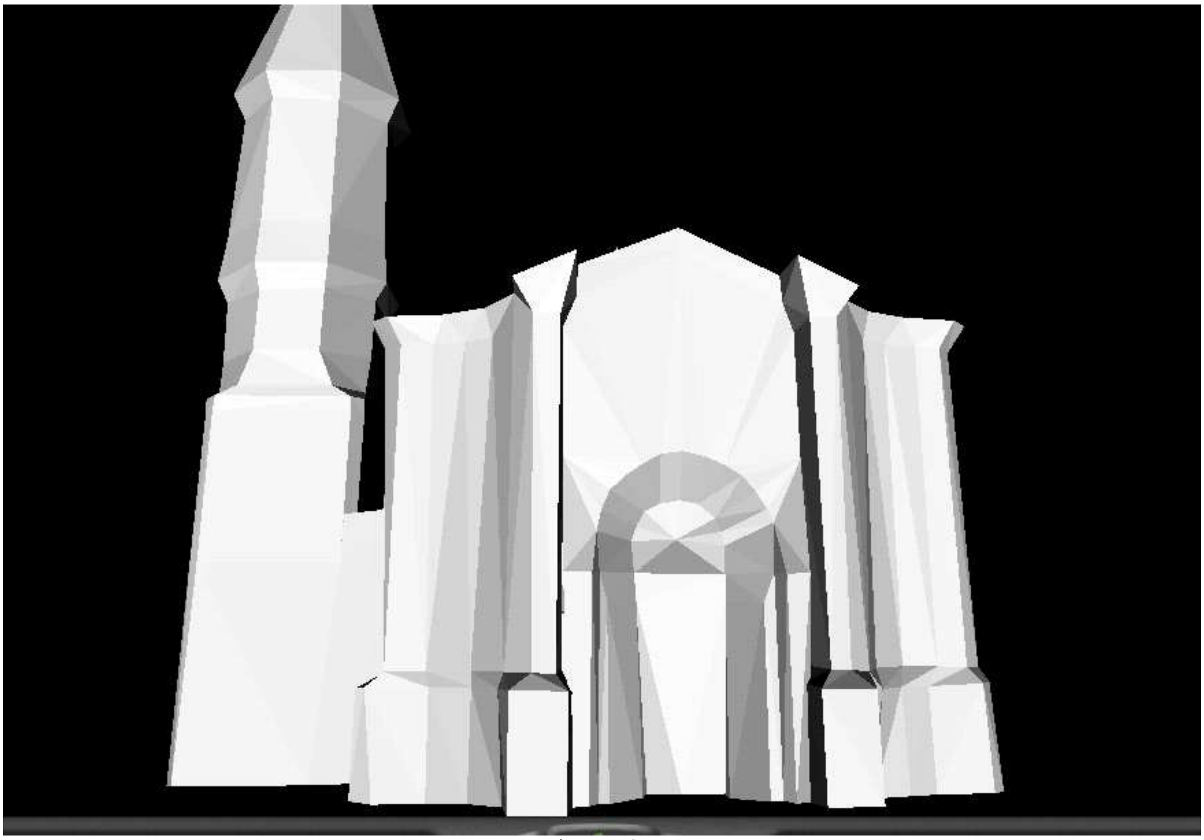


Figure 5.2

After that it was possible add the texture from the digital images using the program PHMOD. Some of the triangles' texture had to be changed manually choosing another photo to get a better result. The problem was that there were differences in brightness/contrast between the photos.

Figure 5.4: model for camera data.

6. CONCLUSION

6.1 Problems and constrains

Despite we had good tools to carry out this project, trying to make a 3D model of such a big and heterogeneous building is not always an easy work. Here are described some of the problems we have found out in the resolution of our project:

- Bad geometrical configuration: Because of the narrow streets we were not able to take the photos from a good point of view, so the camera positions was not at the best situation. A lot of parts of the church have been photographed with too small bases, therefore the cameras axes intersect at a very narrow angle (it is proved to be 121gon the intersection angle at which the best accuracy is obtained) [W. Grossmann et al.,1983].

- We did not know the focal length value: we estimated the focal length of the first series of photographs to be 2000 pixels. This figure was in fact completely wrong, so it was very hard to orient the photos with succes because adjustment did not converge. The problem of false approximations was even harder to be solved because, additionally, there were numbering errors in some of the control points situated in those parts of the church where it would have been possible to compute the focal length directly from the control points. We made adjustment step by step, each time adding just one photo; when we achieved to orient the photos of one of the corners of the church (leaving aside the control points detected to have been mis-identified), the program was able to calculate the real focal length that was about 600 pixels. Once we had this value corrected, it was much easier to orient the rest of the photos.

  Afterwards we had the same problem with the new photos we added to the project since they were made with the same camera but without the "wide angle" objective, so the focal length was bigger as the first one. Once again we had to orient the new photos one after the other until the program had enough redundancy to calculate the new focal length. We estimated it with a size of 1000 pixels. This time this figure was not so wrong and convergence was achieved more easily.

- The whole church was not completely covered with photos: When making the modelling of the church and getting a VRML 3D object, we realized that a great part of the church was missing. This was not a big surprise for us since we did not have photos taken from the air. Therefore a great part of the roof of the building is missing. Here it is shown a perspective of the 3D model where this can be seen:

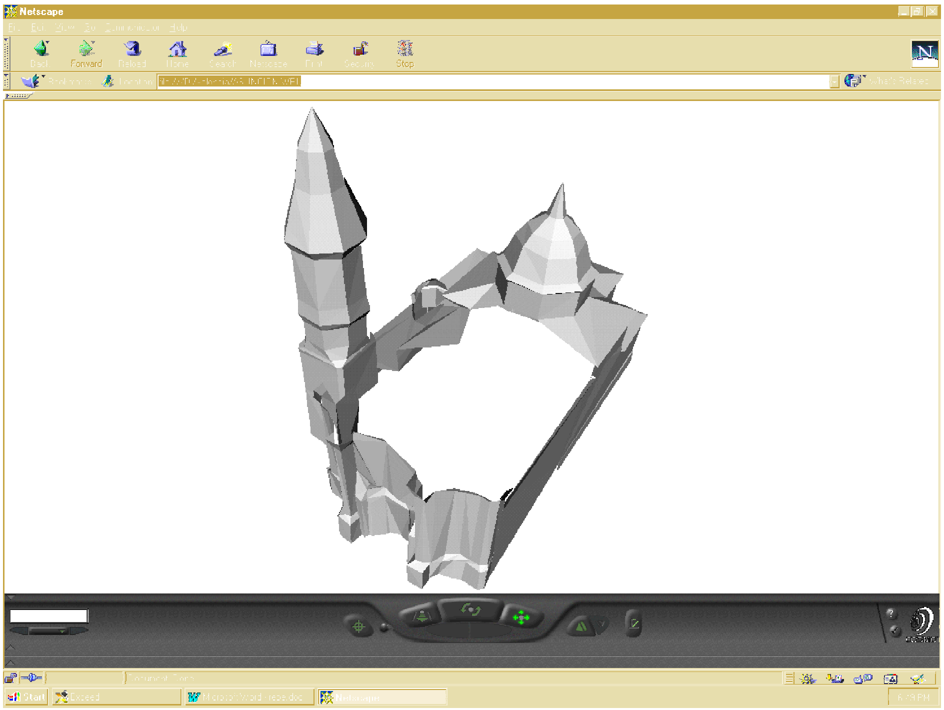


Figure 6.1

- Adding texture: Once we had adjusted the whole of the first group of photos, we generated the VRML 3D object of the church and then we added its texture. When making this, the result we obtained was not very satisfactory as far as there were parts of the church with non-homogeneous texture due to the shadows. Furthermore, there was a corner of the church that was not seen in any photo. For these reasons we had to make new photos of those parts and add them to the project.

  When we added the texture for the second time, the result was much better. Instead of that, there was a side of the church with a very bad texture due to the shadows

6.2 Results

As explained in section 2.2, during the adjustment process robust estimation techniques has been applied to detect gross errors and perform the accuracy.

Here are shown the most relevant data:

- Observations: 7233
- Unknowns: 2345
- Redundancy: 4888

- The average values of the accuracy obtained in the different kind of points are:

	e_X [m]	e_Y [m]	e_Z [m]
POLYGONAL	0,0222	0,0134	0,0058
CONTROL POINTS	0,0281	0,0244	0,0163
POINTS OF THE GROUND FLOOR	0,0198	0,0242	0,0101
MODELLING POINTS	0,2350	0,2972	0,1310
TIE POINTS	0,1122	0,1599	0,0486
CAMERA POSSITIONS	0,1391	0,1300	0,1120

Table (2)

- Sigma a priori: 0,500 pixels
- Sigma a posteriori: 0,858 pixels

- Camera distorsion:

Principal r.m.s.l, explanation:

ADPA=99991000. Focal length: 1226,79 pixels

```
 1:       1    -1.444919E+00 # 1.12E+00    a/sig_a=  1.3
 2:       2    -2.631908E+00 # 1.12E+00    a/sig_a=  2.3     significant 98%
 3:       3    -4.770871E-01 # 4.30E+00    a/sig_a= 0.11     not significant ***
 4:       4    -1.060488E+01 # 4.33E+00    a/sig_a=  2.4     significant 98%
   K( 1: 1)= 100.00%
   K( 2: 1)=   4.40%, K( 2: 2)= 100.00%
   K( 3: 1)= -17.44%, K( 3: 2)=  -4.77%, K( 3: 3)= 100.00%
   K( 4: 1)=   6.93%, K( 4: 2)=   5.70%, K( 4: 3)= -93.72%, K( 4: 4)= 100.00%
```

ADPA=99992000. Focal length: 641,89 pixels

```
 1:       1    -6.002969E-01 # 2.21E-01    a/sig_a=  2.7     significant 99%
 2:       2    -4.752092E-01 # 2.19E-01    a/sig_a=  2.2     significant 97%
 3:       3    -3.589814E+01 # 1.36E+00    a/sig_a=  26.     significant 99.8%
 4:       4     7.060219E+00 # 1.53E+00    a/sig_a=  4.6     significant 99.8%
   K( 1: 1)= 100.00%
   K( 2: 1)=   0.38%, K( 2: 2)= 100.00%
   K( 3: 1)=   1.87%, K( 3: 2)=  -0.87%, K( 3: 3)= 100.00%
   K( 4: 1)=  -0.42%, K( 4: 2)=   6.08%, K( 4: 3)= -94.47%, K( 4: 4)= 100.00%
```

The detailed protocol-file of the adjustment can be found in the appendix.

7. APENDIX

PROTOCOL OF THE ADJUSTMENT

```
< File FINAL.TXT                        opened FORMATTE UNKNOWN  SEQUENTI > F
 PROJECT(ASUNCION)  USER(Cristina and Teresa )   00/06/08  18:38:19 <2328>

 Iglesia S.Asuncion

 directory:     111 entries used,     389 available;
 core_memory:   48773 words used, 1451225 available.
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

   <***>   $d adj pho(-10002)omit sig(.5) sh sma;                                           $C  TTY     1495.9  18:39:15
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

   <***>      adj pho(-10002)omit sig(.5) sh sma;                                           $C  TTY     1495.9  18:39:15

  ADJUST PHOTOS(-10002) REFSYS_( 9001) SIGMA( 0.5) OMITMARK SHOWSTAT =SMARKED_(
  0.)

 REFSYS.0800 refrak=0 curvat=0 {-1.0191E-08 6.3780E+06}
 REF     9001.000:   797/   799,  0 !!!
 ShowMARKed      point (    dx      dy      dz   )  weights                index
           6      225 (  13.739  -2.474   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
           7      225 (  11.969  -1.701   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
           8      224 (  -1.508 -12.896   0.000) 1.0E+00 0.0E+00 1.0E+00 1 0 0
           8 64020101 ( -46.604   0.082   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
          10 64000002 (  -0.628  10.438   0.000) 1.0E+00 0.0E+00 1.0E+00 1 0 0
          11      225 (  33.820  16.290   0.000) 0.0E+00 0.0E+00 1.0E+00 0 0 0
          11 64000002 (  -3.085  -7.367   0.000) 1.0E+00 0.0E+00 1.0E+00 1 0 0
          12      225 (  32.044  16.754   0.000) 0.0E+00 0.0E+00 1.0E+00 0 0 0
          12      267 ( -29.497  -1.470   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
          12 64000002 (   3.370  -6.653   0.000) 1.0E+00 0.0E+00 1.0E+00 1 0 0
          17 65040103 (   0.074 -12.032   0.000) 1.0E+00 0.0E+00 1.0E+00 1 0 0
          18 65040103 (  -0.076 -12.954   0.000) 1.0E+00 0.0E+00 1.0E+00 1 0 0
          20      269 ( -13.028   0.366   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
          25     1238 ( -30.896   1.251   0.000) 0.0E+00 2.5E-01 1.0E+00 0 8 0
          26     1238 ( -13.298 -68.551   0.000) 2.5E-01 0.0E+00 1.0E+00 1 0 0
          26 62020303 (  -6.753  -1.254   0.000) 0.0E+00 1.0E+00 1.0E+00 0 7 0
          27      222 (  -1.263  -7.309   0.000) 1.0E+00 0.0E+00 1.0E+00 1 0 0
          28      214 (   1.948  -6.197   0.000) 1.0E+00 0.0E+00 1.0E+00 1 0 0
          28      222 (  -0.307  -5.899   0.000) 1.0E+00 0.0E+00 1.0E+00 2 0 0
          54      280 (  -9.685   0.270   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
          58      278 (   0.918   5.805   0.000) 1.0E+00 0.0E+00 1.0E+00 2 0 0
          58      279 (  -1.022 -11.730   0.000) 1.0E+00 0.0E+00 1.0E+00 6 0 0
          58      281 ( -31.511   0.293   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
          59      279 (  -1.793 -12.255   0.000) 1.0E+00 0.0E+00 1.0E+00 2 0 0
          59      281 ( -31.190  -0.312   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
          61     1401 ( -12.985  -4.369   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
          61     1445 (   0.136  13.110   0.000) 1.0E+00 0.0E+00 1.0E+00 2 0 0
          61     1930 (   1.223  -6.368   0.000) 1.0E+00 0.0E+00 1.0E+00 2 0 0
          62      225 (  39.132  -8.602   0.000) 0.0E+00 0.0E+00 1.0E+00 0 0 0
          62     1931 (  -9.046   2.446   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
          63      225 (  35.677   2.414   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
          63      230 ( -45.533  -1.948   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
          63     1417 (  13.975   0.072   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
          63     1418 (  17.238   1.209   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
          63     1419 (  13.509  -0.523   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
          66      269 (  -7.983  69.326   0.000) 0.0E+00 0.0E+00 1.0E+00 0 0 0
```

```
        67      269 (  -7.756  65.814   0.000) 0.0E+00 0.0E+00 1.0E+00 0 0 0
        68      267 ( -19.522   0.336   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
        68     2022 (   0.009   0.854   0.000) 5.0E+01 0.0E+00 1.0E+00 1 0 0
        69      267 ( -17.283   2.089   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
      1001      251 (   1.646  11.322   0.000) 1.0E+00 0.0E+00 1.0E+00 1 0 0
      1003      251 (   1.802   9.877   0.000) 1.0E+00 0.0E+00 1.0E+00 1 0 0
      1014 64000002 (   0.080  17.393   0.000) 1.0E+00 0.0E+00 1.0E+00 1 0 0
      1059      261 (  -9.188  -0.355   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
      5003      222 (  -2.499 -10.882   0.000) 1.0E+00 0.0E+00 1.0E+00 2 0 0
       105      281 (  -0.608   3.502   0.000) 0.0E+00 0.0E+00 0.0E+00 0 0 0
       105      282 (  -0.394   1.258   0.000) 0.0E+00 0.0E+00 0.0E+00 0 0 0
       109      259 (   0.000   1.406   0.000) 2.5E+01 0.0E+00 0.0E+00 1 0 0
       109      286 (  -0.027  -2.055   0.000) 2.5E+01 0.0E+00 0.0E+00 1 0 0
       110      252 (   1.348   0.656   0.000) 0.0E+00 0.0E+00 0.0E+00 0 0 0
       111      250 (   0.000  -0.885   0.000) 2.5E+01 0.0E+00 0.0E+00 1 0 0
       111      252 (   0.112   0.647   0.000) 2.5E+01 0.0E+00 0.0E+00 1 0 0
       112      260 (   0.000  -1.265   0.000) 2.5E+01 0.0E+00 0.0E+00 1 0 0
       112      266 (   0.000  -5.589   0.000) 2.5E+01 0.0E+00 0.0E+00 2 0 0
       112      269 (   0.000  -9.402   0.000) 2.5E+01 0.0E+00 0.0E+00 1 0 0
       113      267 (  -0.640  -0.039   0.000) 0.0E+00 2.5E+01 0.0E+00 0 * 0
       410      225 (   0.003  -1.202   0.000) 2.5E+01 0.0E+00 0.0E+00 1 0 0
       410      230 (  -0.004   0.367   0.000) 2.5E+01 0.0E+00 0.0E+00 1 0 0
       505      106 (  -0.010   0.015   0.178) 2.5E+01 2.5E+01 0.0E+00 1 1 0
       506      107 (  -0.007   0.007   0.187) 2.5E+01 2.5E+01 0.0E+00 2 1 0
      1505      106 (   0.009  -0.004   0.181) 2.5E+01 2.5E+01 0.0E+00 1 1 0
      1506      107 (   0.011  -0.006   0.186) 2.5E+01 2.5E+01 0.0E+00 2 1 0
      1511      112 (  -0.024  -0.382  -0.037) 2.5E+01 0.0E+00 3.3E+01 2 0 *

Solutiontime =    26.367 sec.,trace=     0.000, swei= 1.00E+06, eps= 1.00E-06
REF     9001  :   114 unused points
Count of computed points in:
REF :  683, IOR :    2, ROT :   94, ADPA:    8

pll= 3.6220E+03,pvv= 3.6022E+03,nx= 2345,no= 7233,nt=  0,oeq 165788,neq 274929
IT=  0, s(pll/nobs= 7233)= 7.0765E-01 s(pvv/nred= 4888)= 8.5846E-01 =sigma0

CPU-time  R:   26.04, x: 0.33, qvv:    0.00, qxx:    0.00, total:   26.37 sec.
Storage:              274929            0             0          274929 words used, 1010449 available
  <***>   it 5;                                                                          $C  TTY     1524.0  18:39:56

 ADJUST PHOTOS(-10002) REFSYS_( 9001) SIGMA( 0.5) SHOWSTAT =SMARKED_( 0.)
 OMITMARK ITERATE( 5)

REFSYS.0800 refrak=0 curvat=0 {-1.0191E-08 6.3780E+06}
REF     9001.000:   797/   799,  0 !!!
ShowMARKed      point (   dx      dy      dz   )  weights               index
         6      225 (  13.469  -2.498   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
         7      225 (  11.699  -1.731   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
         8      224 (  -1.572 -12.888   0.000) 1.0E+00 0.0E+00 1.0E+00 1 0 0
         8 64020101 ( -46.710  -0.182   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
        10 64000002 (  -0.637  10.446   0.000) 1.0E+00 0.0E+00 1.0E+00 1 0 0
        11      225 (  33.889  16.296   0.000) 0.0E+00 0.0E+00 1.0E+00 0 0 0
        11 64000002 (  -3.170  -7.254   0.000) 1.0E+00 0.0E+00 1.0E+00 1 0 0
        12      225 (  32.070  16.729   0.000) 0.0E+00 0.0E+00 1.0E+00 0 0 0
        12      267 ( -29.435  -1.615   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
        12 64000002 (   3.234  -6.618   0.000) 1.0E+00 0.0E+00 1.0E+00 1 0 0
        17 65040103 (   0.073 -12.022   0.000) 1.0E+00 0.0E+00 1.0E+00 1 0 0
        18 65040103 (  -0.071 -12.941   0.000) 1.0E+00 0.0E+00 1.0E+00 1 0 0
        20      269 ( -13.042   0.373   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
        25     1238 ( -30.283   0.943   0.000) 0.0E+00 2.5E-01 1.0E+00 0 8 0
        26     1238 ( -12.805 -68.723   0.000) 2.5E-01 0.0E+00 1.0E+00 1 0 0
        26 62020303 (  -6.843  -1.290   0.000) 0.0E+00 1.0E+00 1.0E+00 0 7 0
        27      222 (  -1.319  -7.302   0.000) 1.0E+00 0.0E+00 1.0E+00 1 0 0
        28      214 (   1.956  -6.216   0.000) 1.0E+00 0.0E+00 1.0E+00 1 0 0
```

```
      28      222 (  -0.520  -5.926   0.000) 1.0E+00 0.0E+00 1.0E+00 1 0 0
      54      280 (  -9.737   0.270   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
      58      278 (   0.917   5.847   0.000) 1.0E+00 0.0E+00 1.0E+00 1 0 0
      58      279 (  -1.066 -11.693   0.000) 1.0E+00 0.0E+00 1.0E+00 6 0 0
      58      281 ( -31.529   0.319   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
      59      279 (  -1.811 -12.264   0.000) 1.0E+00 0.0E+00 1.0E+00 2 0 0
      59      281 ( -31.238  -0.324   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
      61     1401 ( -13.220  -3.410   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
      61     1445 (   0.128  13.016   0.000) 1.0E+00 0.0E+00 1.0E+00 2 0 0
      61     1930 (   1.242  -6.408   0.000) 1.0E+00 0.0E+00 1.0E+00 2 0 0
      62      225 (  39.063  -8.319   0.000) 0.0E+00 0.0E+00 1.0E+00 0 0 0
      62     1931 (  -9.228   2.519   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
      63      225 (  35.618   2.659   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
      63      230 ( -45.577  -2.065   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
      63     1417 (  13.943   0.059   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
      63     1418 (  17.305   1.420   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
      63     1419 (  13.474  -0.540   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
      66      269 (  -7.978  69.308   0.000) 0.0E+00 0.0E+00 1.0E+00 0 0 0
      67      269 (  -7.749  65.795   0.000) 0.0E+00 0.0E+00 1.0E+00 0 0 0
      68      267 ( -19.482   0.321   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
      68     2022 (  -0.001   0.862   0.000) 5.0E+01 0.0E+00 1.0E+00 1 0 0
      69      267 ( -17.302   2.077   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
    1001      251 (   1.627  11.321   0.000) 1.0E+00 0.0E+00 1.0E+00 1 0 0
    1003      251 (   1.843   9.821   0.000) 1.0E+00 0.0E+00 1.0E+00 1 0 0
    1014 64000002 (   0.076  17.362   0.000) 1.0E+00 0.0E+00 1.0E+00 1 0 0
    1059      261 (  -9.137  -0.348   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
    5003      222 (  -2.637 -10.846   0.000) 1.0E+00 0.0E+00 1.0E+00 2 0 0
     105      281 (  -0.608   3.502   0.000) 0.0E+00 0.0E+00 0.0E+00 0 0 0
     105      282 (  -0.394   1.250   0.000) 0.0E+00 0.0E+00 0.0E+00 0 0 0
     109      259 (   0.000   1.406   0.000) 2.5E+01 0.0E+00 0.0E+00 1 0 0
     109      286 (  -0.026  -2.053   0.000) 2.5E+01 0.0E+00 0.0E+00 1 0 0
     110      252 (   1.348   0.657   0.000) 0.0E+00 0.0E+00 0.0E+00 0 0 0
     111      250 (   0.000  -0.884   0.000) 2.5E+01 0.0E+00 0.0E+00 1 0 0
     111      252 (   0.108   0.647   0.000) 2.5E+01 0.0E+00 0.0E+00 1 0 0
     112      260 (   0.000  -1.265   0.000) 2.5E+01 0.0E+00 0.0E+00 1 0 0
     112      266 (   0.000  -5.589   0.000) 2.5E+01 0.0E+00 0.0E+00 2 0 0
     112      269 (   0.000  -9.403   0.000) 2.5E+01 0.0E+00 0.0E+00 1 0 0
     113      267 (  -0.637  -0.041   0.000) 0.0E+00 2.5E+01 0.0E+00 0 * 0
     410      225 (   0.004  -1.189   0.000) 2.5E+01 0.0E+00 0.0E+00 1 0 0
     410      230 (  -0.005   0.366   0.000) 2.5E+01 0.0E+00 0.0E+00 1 0 0
     505      106 (  -0.011   0.015   0.179) 2.5E+01 2.5E+01 0.0E+00 1 1 0
     506      107 (  -0.007   0.007   0.188) 2.5E+01 2.5E+01 0.0E+00 2 1 0
    1505      106 (   0.010  -0.003   0.181) 2.5E+01 2.5E+01 0.0E+00 1 1 0
    1506      107 (   0.011  -0.006   0.187) 2.5E+01 2.5E+01 0.0E+00 2 1 0
    1511      112 (  -0.023  -0.382  -0.037) 2.5E+01 0.0E+00 3.3E+01 2 0 *

Solutiontime =    26.422 sec.,trace=     0.000, swei= 1.00E+06, eps= 1.00E-06
REF     9001  :   114 unused points
Count of computed points in:
REF :  683, IOR :    2, ROT :   94, ADPA:    8

pll= 3.6022E+03,pvv= 3.6022E+03,nx= 2345,no= 7233,nt=  0,oeq 165788,neq 274929
IT= -2, s(pll/nobs= 7233)= 7.0571E-01 s(pvv/nred= 4888)= 8.5846E-01 =sigma0

CPU-time  R:   26.09, x: 0.28, qvv:    0.00, qxx:    0.00, total:   26.42 sec.
Storage:             274929            0             0          274929 words used, 1010449 available
  <***>   adj pho(-10002)omit sig(.5) qxx qvv sh sma pri;                               $C  TTY     1552.2  18:42:54

 ADJUST PHOTOS(-10002) REFSYS_( 9001) SIGMA =QXX =QVV( 0.5) ITERATE OMITMARK
 SHOWSTAT =PRINT =SMARKED_( 0.)

REFSYS.0800 refrak=0 curvat=0 {-1.0191E-08 6.3780E+06}
REF     9001.000:   797/   799,  0 !!!
```

```
REF     9001.000: average discrepancies before adjustment 2209, CATEGORY   1
obs          :ukn:#all-#mk:used co:sum_res  robfac  _resres,  resmax _ nammax #   sigma  prc/org   rotpar  ior/adp .sub
ShowMARKed       point (   dx      dy      dz   )  weights                index
           6      225 (  13.469  -2.498   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
PHO        6:OPRB 117,  1: 116 x:  -0.036   4.927    1.379    4.797     1418  see room 90000006       6 99992000 .002
                         : 117 y:   0.086   5.844    1.670   -8.316     1401  see room
           7      225 (  11.699  -1.731   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
PHO        7:OPRB 117,  1: 115 x:   0.181   5.858    1.325    5.223     1418  see room 90000007       7 99992000 .002
                         : 116 y:  -0.211   4.663    1.667   -9.326     1401  see room
           8      224 (  -1.572 -12.888   0.000) 1.0E+00 0.0E+00 1.0E+00 1 0 0
           8 64020101 ( -46.709  -0.181   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
PHO        8:OPRB 108,  1: 106 x:  -0.200   8.959    1.377   -5.724     1930  see room 90000008       8 99992000 .002
                     ,  1: 106 y:  -0.076   4.640    1.514   -8.157     1401  see room
PHO        9:OPRB  51    :  51 x:  -0.467   4.846    1.836   -5.240     1417  see room 90000009       9 99992000 .002
                         :  51 y:  -0.179   3.105    1.505   -4.237     1046  see room
          10 64000002 (  -0.635  10.448   0.000) 1.0E+00 0.0E+00 1.0E+00 1 0 0
PHO       10:OPRB  43    :  43 x:  -0.050   3.550    1.552   -4.936     1415  see room 90000010      10 99992000 .002
                     ,  1:  42 y:  -0.201   4.842    1.567    4.044     1026  see room
          11      225 (  33.890  16.296   0.000) 0.0E+00 0.0E+00 1.0E+00 0 0 0
          11 64000002 (  -3.171  -7.255   0.000) 1.0E+00 0.0E+00 1.0E+00 1 0 0
PHO       11:OPRB  60,  1:  59 x:   0.288   6.341    1.250    3.568     1786  see room 90000011      11 99992000 .002
                     ,  2:  58 y:  -0.238   7.096    1.514   -3.984     1417  see room
          12      225 (  32.070  16.730   0.000) 0.0E+00 0.0E+00 1.0E+00 0 0 0
          12      267 ( -29.433  -1.615   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
          12 64000002 (   3.233  -6.617   0.000) 1.0E+00 0.0E+00 1.0E+00 1 0 0
PHO       12:OPRB  85,  2:  83 x:   0.209   6.466    1.776    8.238     1977  see room 90000012      12 99992000 .002
                     ,  2:  83 y:  -0.206   5.192    1.940   -8.127     1440  see room
          17 65040103 (   0.073 -12.021   0.000) 1.0E+00 0.0E+00 1.0E+00 1 0 0
PHO       17:OPRB  94    :  94 x:  -0.012   3.871    1.130   -3.526     1749  see room 90000017      17 99992000 .002
                     ,  1:  93 y:   0.041   2.331    1.382    4.661     1740  see room
          18 65040103 (  -0.071 -12.940   0.000) 1.0E+00 0.0E+00 1.0E+00 1 0 0
PHO       18:OPRB  89    :  89 x:   0.075   4.151    1.070    3.186     1624  see room 90000018      18 99992000 .002
                     ,  1:  88 y:   0.156   3.634    1.225    4.327     1740  see room
PHO       19:OPRB 123    : 123 x:  -0.015   3.410    1.162   -4.261     1955  see room 90000019      19 99992000 .002
                         : 123 y:  -0.019   4.252    2.132   -8.505     1672  see room
          20      269 ( -13.041   0.373   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
PHO       20:OPRB 121,  1: 120 x:   0.011   4.094    1.227   -5.062     1756  see room 90000020      20 99992000 .002
                         : 121 y:  -0.058   4.582    1.899   -9.163     1672  see room
PHO       22:OPRB  47    :  47 x:  -0.590   4.312    1.917   -5.994     1672  see room 90000022      22 99992000 .002
                         :  47 y:   0.225   2.964    1.481    5.929     1776  see room
PHO       24:OPRB  46    :  45 x:  -0.575   7.073    2.347   -6.999     1672  see room 90000024      24 99992000 .002
                         :  45 y:   0.638   2.535    1.335    4.011     1777  see room
          25     1238 ( -30.305   0.953   0.000) 0.0E+00 2.5E-01 1.0E+00 0 8 0
PHO       25:OPRB  33,  1:  32 x:   0.227   6.095    1.814    5.921     1225  see room 90000025      25 99992000 .002
                         :  33 y:  -0.142   8.641    1.459   -4.339     1205  see room
          26     1238 ( -12.825 -68.714   0.000) 2.5E-01 0.0E+00 1.0E+00 1 0 0
          26 62020303 (  -6.845  -1.290   0.000) 0.0E+00 1.0E+00 1.0E+00 0 7 0
PHO       26:OPRB  35,  1:  34 x:  -0.318   8.882    2.969  -12.825     1238  see room 90000026      26 99992000 .002
                     ,  1:  34 y:  -0.054   8.160    1.487   -4.370     1205  see room
          27      222 (  -1.319  -7.303   0.000) 1.0E+00 0.0E+00 1.0E+00 1 0 0
PHO       27:OPRB  18    :  18 x:   0.187   6.722    1.587    4.164     1238  see room 90000027      27 99992000 .002
                     ,  1:  17 y:  -0.054   4.020    0.875   -2.010      209  see room
          28      214 (   1.955  -6.218   0.000) 1.0E+00 0.0E+00 1.0E+00 1 0 0
          28      222 (  -0.519  -5.926   0.000) 1.0E+00 0.0E+00 1.0E+00 1 0 0
PHO       28:OPRB  23    :  23 x:  -0.037   8.542    1.561    4.271      208  see room 90000028      28 99992000 .002
                     ,  2:  21 y:  -0.293   5.149    1.211   -3.113     1207  see room
PHO       31:OPRB  10    :  10 x:  -0.033   0.611    0.246   -0.528     1207  see room 90000031      31 99992000 .002
                         :  10 y:   0.088   1.028    0.389   -0.514 62030101  see room
PHO       32:OPRB  10    :  10 x:   0.097   1.044    0.345    0.817     1206  see room 90000032      32 99992000 .002
                         :  10 y:   0.146   2.844    0.682   -1.422 62030101  see room
PHO       33:OPRB  24    :  24 x:   0.126   2.595    0.925   -2.610     1205  see room 90000033      33 99992000 .002
                         :  24 y:  -0.400   4.554    2.146   -9.108     1225  see room
PHO       34:OPRB  27    :  27 x:  -0.138   4.005    1.750   -8.010     1205  see room 90000034      34 99992000 .002
                         :  27 y:  -0.280   4.847    2.007   -9.694     1225  see room
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PHO       35:OPRB  30    :  30 x:  -0.263   1.677    0.770   -1.802     1316  see room 90000035      35 99992000 .002
                         :  30 y:   0.008   1.505    1.040   -2.834     1233  see room
PHO       36:OPRB  31    :  31 x:   0.004   2.551    0.761    2.075     1023  see room 90000036      36 99992000 .002
                         :  31 y:  -0.110   2.316    1.689   -4.632     1016  see room
PHO       37:OPRB  24    :  24 x:   0.266   3.130    1.409    5.298     1205  see room 90000037      37 99992000 .002
                         :  24 y:   0.566   3.299    1.547    5.447     1225  see room
PHO       38:OPRB  22    :  22 x:   0.088   3.828    1.138    4.012     1205  see room 90000038      38 99992000 .002
                         :  22 y:   0.517   4.197    1.857    7.160     1225  see room
          54      280 (  -9.738   0.270   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
PHO       54:OPRB  22,  1:  21 x:   0.272   4.367    1.582    4.868     1313  see room 90000054      54 99992000 .002
                         :  22 y:   0.007   1.694    0.329    0.847 63020102  see room
PHO       55:OPRB  17    :  17 x:   0.439   4.045    2.194    8.091     1313  see room 90000055      55 99992000 .002
                         :  17 y:  -0.099   1.917    0.426   -0.958      217  see room
PHO       56:OPRB  77    :  77 x:   0.004   2.458    1.062   -4.724     1018  see room 90000056      56 99992000 .002
                         :  77 y:  -0.114   4.099    1.795   -8.197     1018  see room
PHO       57:OPRB  76    :  76 x:   0.341   3.407    2.866   17.036     5000  see room 90000057      57 99992000 .002
                         :  76 y:   0.046   4.266    1.630   -8.532     1309  see room
          58      278 (   0.919   5.846   0.000) 1.0E+00 0.0E+00 1.0E+00 1 0 0
          58      279 (  -1.065 -11.693   0.000) 1.0E+00 0.0E+00 1.0E+00 6 0 0
          58      281 ( -31.529   0.319   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
PHO       58:OPRB  71,  1:  70 x:  -0.258   6.737    2.167  -13.473     1309  see room 90000058      58 99992000 .002
                    ,  2:  69 y:   0.169   5.864    1.122    5.666     1434  see room
          59      279 (  -1.811 -12.264   0.000) 1.0E+00 0.0E+00 1.0E+00 2 0 0
          59      281 ( -31.238  -0.324   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
PHO       59:OPRB  65,  1:  64 x:  -0.299   7.139    2.344  -14.277     1309  see room 90000059      59 99992000 .002
                    ,  1:  64 y:  -0.041   3.514    0.822    1.757      282  see room
PHO       60:OPRB 123    : 123 x:  -0.029   3.619    1.418   -7.238     1941  see room 90000060      60 99992000 .002
                         : 123 y:   0.227   4.754    1.833    9.509     1445  see room
          61     1401 ( -13.221  -3.403   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
          61     1445 (   0.129  13.016   0.000) 1.0E+00 0.0E+00 1.0E+00 2 0 0
          61     1930 (   1.242  -6.407   0.000) 1.0E+00 0.0E+00 1.0E+00 2 0 0
PHO       61:OPRB 132,  1: 131 x:  -0.003   8.267    0.956    4.133     1430  see room 90000061      61 99992000 .002
                    ,  2: 130 y:  -0.127   6.805    1.256   -3.909     1008  see room
          62      225 (  39.066  -8.319   0.000) 0.0E+00 0.0E+00 1.0E+00 0 0 0
          62     1931 (  -9.226   2.517   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
PHO       62:OPRB 119,  2: 115 x:  -0.122   5.274    1.377   -8.001     1032  see room 90000062      62 99992000 .002
                    ,  1: 116 y:  -0.062   8.042    1.080   -4.021     1917  see room
          63      225 (  35.620   2.661   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
          63      230 ( -45.573  -2.064   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
          63     1417 (  13.945   0.060   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
          63     1418 (  17.307   1.420   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
          63     1419 (  13.477  -0.539   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
PHO       63:OPRB 115,  5: 110 x:  -0.084   5.557    1.485  -11.115     1007  see room 90000063      63 99992000 .002
                         : 115 y:  -0.039   5.321    0.777    2.661      225  see room
          66      269 (  -7.978  69.309   0.000) 0.0E+00 0.0E+00 1.0E+00 0 0 0
PHO       66:OPRB  73,  1:  72 x:   0.004   5.012    0.874    2.506     1675  see room 90000066      66 99992000 .002
                    ,  1:  72 y:   0.000   5.709    0.769   -2.854 62010101  see room
          67      269 (  -7.750  65.795   0.000) 0.0E+00 0.0E+00 1.0E+00 0 0 0
PHO       67:OPRB  96,  1:  95 x:   0.004   5.290    0.725    2.645      276  see room 90000067      67 99992000 .002
                    ,  1:  95 y:  -0.006   4.376    0.659    2.188     1756  see room
          68      267 ( -19.480   0.322   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
          68     2022 (   0.000   0.862   0.000) 5.0E+01 0.0E+00 1.0E+00 1 0 0
PHO       68:OPRB 110,  1: 109 x:   0.020   8.297    1.050   -4.149     1418  see room 90000068      68 99992000 .002
                    ,  1: 109 y:   0.065   7.173    0.915    3.587     1675  see room
          69      267 ( -17.300   2.075   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
PHO       69:OPRB 103,  1: 102 x:   0.017   6.811    1.092    3.406     1418  see room 90000069      69 99992000 .002
                         : 103 y:  -0.081   8.533    1.107    4.267     1936  see room
        1001      251 (   1.627  11.319   0.000) 1.0E+00 0.0E+00 1.0E+00 1 0 0
PHO     1001:OPRB  60    :  60 x:   0.187   3.255    1.122    2.940     1413  see room 90001001    1001 99991000 .002
                    ,  1:  59 y:   0.506   3.504    1.947    7.008     1032  see room
PHO     1002:OPRB  29    :  29 x:   0.071   2.987    1.942   -5.973     1056  see room 90001002    1002 99991000 .002
                         :  29 y:   0.945   3.252    2.121    6.503     1007  see room
        1003      251 (   1.843   9.821   0.000) 1.0E+00 0.0E+00 1.0E+00 1 0 0
PHO     1003:OPRB  79    :  79 x:  -0.287   3.892    1.508   -5.449     1056  see room 90001003    1003 99991000 .002
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                , 1:  78 y:  -0.308   7.507    3.462  -15.015     1429  see room
PHO    1004:OPRB  22    :  22 x:   0.009   2.269    2.110    4.538     1931  see room 90001004     1004 99991000 .002
                        :  22 y:   0.014   7.392    3.883   14.783     1931  see room
PHO    1005:OPRB  30    :  30 x:  -0.188   6.872    3.248  -13.743     1935  see room 90001005     1005 99991000 .002
                        :  30 y:  -0.161   4.485    2.879   -8.969     1935  see room
PHO    1006:OPRB  28    :  28 x:   0.298   2.839    1.841    5.679     1954  see room 90001006     1006 99991000 .002
                        :  28 y:   0.290   1.879    1.767    3.758     1414  see room
       1014 64000002 (   0.075  17.360   0.000) 1.0E+00 0.0E+00 1.0E+00 1 0 0
PHO    1014:OPRB  58    :  58 x:   0.120   7.232    2.576   14.464     1056  see room 90001014     1014 99991000 .002
                , 1:  57 y:  -0.324   8.042    2.900  -16.085     1056  see room
       1059      261 (  -9.138  -0.349   0.000) 0.0E+00 1.0E+00 1.0E+00 0 * 0
PHO    1059:OPRB  34, 1:  33 x:   0.288   3.544    2.725    6.815     1764  see room 90001059     1059 99991000 .002
                        :  34 y:  -0.235   3.739    3.063   -7.478     1936  see room
PHO    1060:OPRB  29    :  29 x:   0.623   3.448    2.117    5.604     1936  see room 90001060     1060 99991000 .002
                        :  29 y:  -1.035   6.374    4.325  -12.748     1966  see room
PHO    2004:OPRB  22    :  22 x:   0.003   4.745    3.593   -9.490     1930  see room 90002004     2004 99991000 .002
                        :  22 y:   0.010   4.862    3.614    9.723     1930  see room
PHO    2005:OPRB  27    :  27 x:   0.025   4.829    3.089   -9.658     1935  see room 90002005     2005 99991000 .002
                        :  27 y:  -0.012   3.429    2.570    6.858     1917  see room
PHO    2006:OPRB  19    :  19 x:   0.027   1.486    1.328   -2.972     1933  see room 90002006     2006 99991000 .002
                        :  19 y:   0.190   1.680    1.634    3.360     1933  see room
PHO    3004:OPRB  22    :  22 x:   0.041   2.634    1.985    5.267     1951  see room 90003004     3004 99991000 .002
                        :  22 y:  -0.019   3.590    2.055    7.180     1987  see room
PHO    3005:OPRB  27    :  27 x:   0.019   2.063    1.856   -4.126     1952  see room 90003005     3005 99991000 .002
                        :  27 y:   0.279   3.600    2.685   -7.201     1984  see room
PHO    3006:OPRB  19    :  19 x:   0.011   2.296    1.883    4.593     1960  see room 90003006     3006 99991000 .002
                        :  19 y:   0.012   2.079    1.892    4.159     1955  see room
PHO    4004:OPRB  22    :  22 x:  -0.241   2.761    1.907    5.521     1930  see room 90004004     4004 99991000 .002
                        :  22 y:  -0.100   4.949    2.906    9.899     1930  see room
PHO    4005:OPRB  26    :  26 x:  -0.065   1.676    1.092   -3.352     2010  see room 90004005     4005 99991000 .002
                        :  26 y:   0.153   2.325    1.812    4.651     1904  see room
PHO    4006:OPRB  18    :  18 x:  -0.002   0.867    0.785   -1.734     1966  see room 90004006     4006 99991000 .002
                        :  18 y:  -0.005   1.267    0.978    2.534     2019  see room
PHO    5001:OPRB  13    :  13 x:  -0.399   4.769    1.096   -2.384 63020102  see room 90005001     5001 99992000 .002
                        :  13 y:  -0.091   4.226    0.900    2.113 63020102  see room
PHO    5002:OPRB  10    :  10 x:   0.222   3.641    1.191    2.787     1313  see room 90005002     5002 99992000 .002
                        :  10 y:  -0.160   1.415    0.555   -1.413     1216  see room
       5003      222 (  -2.636 -10.845   0.000) 1.0E+00 0.0E+00 1.0E+00 2 0 0
PHO    5003:OPRB  25    :  25 x:   0.126   6.611    1.693    4.164     1238  see room 90005003     5003 99992000 .002
                , 1:  24 y:  -0.194   4.735    0.914   -2.368 62020102  see room
PHO    5004:OPRB  15    :  15 x:  -0.667   5.534    1.840   -4.900     1201  see room 90005004     5004 99992000 .002
                        :  15 y:  -0.296   4.806    1.313    2.403      284  see room
PHO    5005:OPRB  10    :  10 x:   0.066   2.580    0.492    1.290 62010402  see room 90005005     5005 99992000 .002
                        :  10 y:   0.228   2.021    0.803    1.984     1313  see room
PHO    5006:OPRB  20    :  20 x:   0.443   2.565    1.079    2.754     1313  see room 90005006     5006 99992000 .002
                        :  20 y:  -0.280   4.857    1.113    2.428      217  see room
PHO    5007:OPRB  14    :  14 x:   0.432   2.145    1.138    3.039     1313  see room 90005007     5007 99992000 .002
                        :  14 y:   0.007   2.732    0.822   -1.366     5000  see room
PHO    7002:OPRB  24    :  24 x:  -0.149   2.917    1.806   -5.834     1056  see room 90007002     7002 99991000 .002
                        :  24 y:   0.101   1.743    1.392   -3.487     1232  see room
PHO    8002:OPRB  24    :  24 x:  -0.007   1.822    1.435   -3.645     1064  see room 90008002     8002 99991000 .002
                        :  24 y:  -0.001   3.413    1.821    6.827     1056  see room
PHO    9002:OPRB  25    :  25 x:  -0.014   2.659    1.899   -5.319     1018  see room 90009002     9002 99991000 .002
                        :  25 y:   0.006   3.560    2.205   -7.120     1068  see room
PHO   10002:OPRB  25    :  25 x:   0.093   2.040    1.848    4.080     1018  see room 90010002    10002 99991000 .002
                        :  25 y:   0.357   2.741    2.496    5.482     1018  see room
PLR     101:OOR.   8    :   8 a:   0.000   3.450   0.0310   0.0690      271     0.020      101      101      101 .001
                        :   7 z:   0.004   1.895   0.0206  -0.0379      271     0.020
PLR     102:OOR.   9    :   9 a:   0.000   1.425   0.0130  -0.0285      216     0.020      102      102      102 .001
                        :   8 z:  -0.001   1.752   0.0203   0.0350      216     0.020
PLR     103:OOR.  14    :  14 a:   0.000   1.929   0.0141  -0.0386      214     0.020      103      103      103 .001
                        :  13 z:   0.001   1.414   0.0113  -0.0283      214     0.020
PLR     104:OOR.  13    :  13 a:   0.000   4.285   0.0369   0.0857      208     0.020      104      104      104 .001
                        :  12 z:  -0.005   1.398   0.0126  -0.0280      220     0.020
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       105     281 (  -0.608   3.502   0.000) 0.0E+00 0.0E+00 0.0E+00 0 0 0
       105     282 (  -0.394   1.250   0.000) 0.0E+00 0.0E+00 0.0E+00 0 0 0
PLR    105:OOR.  15,  2:  12 a:   0.000   4.276   0.0320   0.0855     220     0.020     105     105     105 .001
                   ,  2:  11 z:  -0.006   5.141   0.0424   0.1028     220     0.020
PLR    107:OOR.   6    :   6 a:   0.000   2.167   0.0204  -0.0433     278     0.020     107     107     107 .001
                       :   5 z:   0.023   6.261   0.0578   0.1252     282     0.020
PLR    108:OOR.   7    :   6 a:   0.000   2.874   0.0310  -0.0575     284     0.020     108     108     108 .001
                       :   5 z:   0.002   2.980   0.0339   0.0596     283     0.020
       109     259 (   0.000   1.406   0.000) 2.5E+01 0.0E+00 0.0E+00 1 0 0
       109     286 (  -0.026  -2.053   0.000) 2.5E+01 0.0E+00 0.0E+00 1 0 0
PLR    109:OOR.  18    :  17 a:   0.000   4.233   0.0292  -0.0847     283     0.020     109     109     109 .001
                   ,  2:  14 z:  -0.005   4.539   0.0317  -0.0908     225     0.020
       110     252 (   1.348   0.657   0.000) 0.0E+00 0.0E+00 0.0E+00 0 0 0
PLR    110:OOR.  18,  1:  15 a:   0.000   4.270   0.0324   0.0854     251     0.020     110     110     110 .001
                   ,  1:  14 z:   0.002   3.429   0.0267   0.0686     244     0.020
       111     250 (   0.000  -0.884   0.000) 2.5E+01 0.0E+00 0.0E+00 1 0 0
       111     252 (   0.108   0.647   0.000) 2.5E+01 0.0E+00 0.0E+00 1 0 0
PLR    111:OOR.  25    :  23 a:   0.000   5.380   0.0357   0.1076     252     0.020     111     111     111 .001
                   ,  2:  20 z:  -0.005   3.030   0.0226  -0.0606     255     0.020
       112     260 (   0.000  -1.265   0.000) 2.5E+01 0.0E+00 0.0E+00 1 0 0
       112     266 (   0.000  -5.589   0.000) 2.5E+01 0.0E+00 0.0E+00 2 0 0
       112     269 (   0.000  -9.403   0.000) 2.5E+01 0.0E+00 0.0E+00 1 0 0
PLR    112:OOR.  13    :  12 a:   0.000   5.039   0.0429  -0.1008     262     0.020     112     112     112 .001
                   ,  3:   8 z:  -0.002   2.272   0.0307   0.0454     262     0.020
       113     267 (  -0.637  -0.041   0.000) 0.0E+00 2.5E+01 0.0E+00 0 * 0
PLR    113:OOR.  14,  1:  11 a:   0.000   2.639   0.0286  -0.0528     271     0.020     113     113     113 .001
                       :  11 z:   0.003   2.941   0.0271   0.0588     270     0.020
       410     225 (   0.004  -1.189   0.000) 2.5E+01 0.0E+00 0.0E+00 1 0 0
       410     230 (  -0.005   0.366   0.000) 2.5E+01 0.0E+00 0.0E+00 1 0 0
PLR    410:OOR.  18    :  17 a:   0.000   1.906   0.0152  -0.0381     224     0.020     110     410     410 .001
                   ,  2:  14 z:   0.000   1.452   0.0122   0.0290     238     0.020
PLR    501:OOR.  11    :  11 a:   0.000   0.553   0.0044   0.0111     113     0.020     101     501     501 .001
                       :  11 z:  -0.005   1.478   0.0118  -0.0296     113     0.020
                       :  11 s:   0.004   1.560   0.0086   0.0234     102     0.015
PLR    502:OOR.   2    :   2 a:   0.000   0.187   0.0035   0.0037     101     0.020     102     502     502 .001
                       :   2 z:  -0.014   1.387   0.0196  -0.0277     101     0.020
                       :   2 s:   0.000   2.069   0.0307   0.0310     103     0.015
PLR    503:OOR.   4    :   4 a:   0.000   0.061   0.0007   0.0012     102     0.020     103     503     503 .001
                       :   4 z:  -0.011   1.185   0.0150  -0.0237     102     0.020
                       :   4 s:  -0.001   2.320   0.0235  -0.0348     102     0.015
PLR    504:OOR.   2    :   2 a:   0.000   0.341   0.0065   0.0068     103     0.020     104     504     504 .001
                       :   2 z:   0.004   0.527   0.0076   0.0105     105     0.020
                       :   2 s:   0.012   3.269   0.0387   0.0490     105     0.015
       505     106 (  -0.011   0.015   0.179) 2.5E+01 2.5E+01 0.0E+00 1 1 0
PLR    505:OOR.   2    :   2 a:   0.000   0.529   0.0103  -0.0106     106     0.020     105     505     505 .001
                       :   2 z:   0.006   0.742   0.0107   0.0148     106     0.020
                   ,  1:   1 s:  -0.021   1.427   0.0214  -0.0214     104     0.015
       506     107 (  -0.007   0.007   0.188) 2.5E+01 2.5E+01 0.0E+00 2 1 0
PLR    506:OOR.   3    :   3 a:   0.000   0.437   0.0066   0.0087     105     0.020     106     506     506 .001
                       :   3 z:   0.004   0.327   0.0047   0.0065     107     0.020
                   ,  1:   2 s:   0.022   2.891   0.0307   0.0434     105     0.015
PLR    507:OOR.   2    :   2 a:   0.000   0.083   0.0016   0.0017     108     0.020     107     507     507 .001
                       :   2 z:  -0.020   1.964   0.0278  -0.0393     108     0.020
                       :   2 s:   0.030   3.101   0.0342   0.0465     106     0.015
PLR    508:OOR.   2    :   2 a:   0.000   0.309   0.0062  -0.0062     109     0.020     108     508     508 .001
                       :   2 z:  -0.023   2.194   0.0311  -0.0439     109     0.020
                       :   2 s:  -0.015   2.557   0.0277  -0.0384     107     0.015
PLR    509:OOR.   3    :   3 a:   0.001   0.251   0.0035   0.0050     110     0.020     109     509     509 .001
                       :   3 z:  -0.013   1.138   0.0159  -0.0228     110     0.020
                       :   3 s:  -0.018   4.255   0.0374  -0.0638     110     0.015
PLR    510:OOR.   2    :   2 a:   0.000   0.480   0.0091   0.0096     111     0.020     110     510     510 .001
                       :   2 z:  -0.025   1.270   0.0248  -0.0254     111     0.020
                       :   2 s:  -0.006   2.726   0.0353  -0.0409     111     0.015
PLR    511:OOR.   3    :   3 a:   0.000   1.319   0.0213   0.0264     112     0.020     111     511     511 .001
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                      :   3 z:  -0.008   0.655   0.0098  -0.0131      110     0.020
                      :   3 s:   0.000   2.280   0.0278   0.0342      110     0.015
PLR     512:OOR.   3  :   3 a:   0.000   0.581   0.0090   0.0116      113     0.020     112     512     512 .001
                      :   3 z:  -0.017   1.307   0.0203  -0.0261      111     0.020
                      :   3 s:  -0.004   0.778   0.0068  -0.0117      113     0.015
PLR     513:OOR.   4  :   4 a:   0.000   0.654   0.0089   0.0131      112     0.020     113     513     513 .001
                      :   4 z:  -0.014   1.952   0.0213  -0.0390      112     0.020
                      :   4 s:   0.001   1.328   0.0130   0.0199      112     0.015
PLR    1501:OOR.   2  :   2 a:   0.001   0.463   0.0086   0.0093      102     0.020     101     501     501 .001
                      :   2 z:   0.030   1.627   0.0303   0.0325      113     0.020
                      :   2 s:   0.018   1.424   0.0186   0.0214      102     0.015
PLR    1502:OOR.   2  :   2 a:   0.000   0.064   0.0011   0.0013      103     0.020     102     502     502 .001
                      :   2 z:   0.016   1.387   0.0198   0.0277      101     0.020
                      :   2 s:   0.001   2.015   0.0288   0.0302      103     0.015
PLR    1503:OOR.   2  :   2 a:   0.000   0.069   0.0011   0.0014      102     0.020     103     503     503 .001
                      :   2 z:   0.027   1.585   0.0274   0.0317      102     0.020
                      :   2 s:  -0.003   2.449   0.0342  -0.0367      102     0.015
PLR    1504:OOR.   2  :   2 a:   0.000   0.338   0.0065   0.0068      105     0.020     104     504     504 .001
                      :   2 z:   0.001   0.339   0.0062   0.0068      103     0.020
                      :   2 s:   0.011   3.077   0.0366   0.0462      105     0.015
       1505      106 (   0.010  -0.003   0.181) 2.5E+01 2.5E+01 0.0E+00 1 1 0
PLR    1505:OOR.   2  :   2 a:  -0.001   0.535   0.0102  -0.0107      104     0.020     105     505     505 .001
                      :   2 z:   0.002   0.356   0.0056   0.0071      104     0.020
                   , 1:   1 s:  -0.022   1.438   0.0216  -0.0216      104     0.015
       1506      107 (   0.011  -0.006   0.187) 2.5E+01 2.5E+01 0.0E+00 2 1 0
PLR    1506:OOR.   2  :   2 a:   0.000   0.563   0.0108   0.0113      107     0.020     106     506     506 .001
                      :   2 z:  -0.002   0.277   0.0042  -0.0055      107     0.020
                   , 1:   1 s:   0.045   3.026   0.0454   0.0454      105     0.015
PLR    1507:OOR.   2  :   2 a:   0.000   0.155   0.0031   0.0031      106     0.020     107     507     507 .001
                      :   2 z:   0.021   2.067   0.0293   0.0413      108     0.020
                      :   2 s:   0.027   2.955   0.0320   0.0443      106     0.015
PLR    1508:OOR.   2  :   2 a:   0.000   0.288   0.0058  -0.0058      107     0.020     108     508     508 .001
                      :   2 z:   0.029   2.543   0.0364   0.0509      109     0.020
                      :   2 s:  -0.016   2.564   0.0275  -0.0385      107     0.015
PLR    1509:OOR.   2  :   2 a:   0.001   0.140   0.0021   0.0028      108     0.020     109     509     509 .001
                      :   2 z:   0.018   1.188   0.0190   0.0238      110     0.020
                      :   2 s:  -0.026   4.201   0.0454  -0.0630      110     0.015
PLR    1510:OOR.   2  :   2 a:   0.000   0.498   0.0095   0.0100      109     0.020     110     510     510 .001
                      :   2 z:   0.029   1.570   0.0294   0.0314      111     0.020
                      :   2 s:  -0.005   2.584   0.0340  -0.0388      111     0.015
       1511      112 (  -0.023  -0.382  -0.037) 2.5E+01 0.0E+00 3.3E+01 2 0 *
PLR    1511:OOR.   2  :   2 a:   0.000   1.196   0.0237   0.0239      110     0.020     111     511     511 .001
                   , 1:   1 z:   0.018   0.903   0.0181   0.0181      110     0.020
                      :   2 s:  -0.002   2.487   0.0352  -0.0373      112     0.015
PLR    1512:OOR.   2  :   2 a:   0.001   0.631   0.0121   0.0126      111     0.020     112     512     512 .001
                      :   2 z:   0.026   1.507   0.0262   0.0301      111     0.020
                      :   2 s:  -0.005   0.707   0.0076  -0.0106      113     0.015
PLR    1513:OOR.   2  :   2 a:   0.000   0.621   0.0120   0.0124      101     0.020     113     513     513 .001
                      :   2 z:   0.028   1.656   0.0284   0.0331      112     0.020
                      :   2 s:   0.002   1.273   0.0176   0.0191      112     0.015
CONP   8888:O___   2  :   1 x:   0.000   0.000    0.000    0.000        0  see room
                      :   2 y:   0.000   0.000    0.000    0.000        0  see room
                      :   1 z:   0.000   0.000    0.000    0.000        0  see room
ROT     101:__R_   1  :   1 x:   0.000   0.160    0.000    0.000      101  see room
                      :   1 y:   0.000   0.034    0.000    0.000      101  see room
ROT     102:__R_   1  :   1 x:   0.000   0.006    0.000    0.000      102  see room
                      :   1 y:   0.000   0.024    0.000    0.000      102  see room
ROT     103:__R_   1  :   1 x:   0.000   0.004    0.000    0.000      103  see room
                      :   1 y:   0.000   0.035    0.000    0.000      103  see room
ROT     104:__R_   1  :   1 x:   0.000   0.084    0.000    0.000      104  see room
                      :   1 y:   0.000   0.061    0.000    0.000      104  see room
ROT     105:__R_   1  :   1 x:   0.000   0.050    0.000    0.000      105  see room
                      :   1 y:   0.000   0.245    0.000    0.000      105  see room
ROT     107:__R_   1  :   1 x:   0.000   0.000    0.000    0.000      107  see room
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                         :   1 y:   0.000   0.319    0.000    0.000      107  see room
ROT      108:__R_   1    :   1 x:   0.000   0.000    0.000    0.000      108  see room
                         :   1 y:   0.000   0.068    0.000    0.000      108  see room
ROT      109:__R_   1    :   1 x:   0.000   0.000    0.000    0.000      109  see room
                         :   1 y:   0.000   0.130    0.000    0.000      109  see room
ROT      110:__R_   1    :   1 x:   0.000   0.000    0.000    0.000      110  see room
                         :   1 y:   0.000   0.016    0.000    0.000      110  see room
ROT      111:__R_   1    :   1 x:   0.000   0.000    0.000    0.000      111  see room
                         :   1 y:   0.000   0.265    0.000    0.000      111  see room
ROT      112:__R_   1    :   1 x:   0.000   0.000    0.000    0.000      112  see room
                         :   1 y:   0.000   0.078    0.000    0.000      112  see room
ROT      113:__R_   1    :   1 x:   0.000   0.000    0.000    0.000      113  see room
                         :   1 y:   0.000   0.175    0.000    0.000      113  see room
ROT      410:__R_   1    :   1 x:   0.000   0.057    0.000    0.000      410  see room
                         :   1 y:   0.000   0.078    0.000    0.000      410  see room
ROT      501:__R_   1    :   1 x:   0.000   0.054    0.000    0.000      501  see room
                         :   1 y:   0.000   0.033    0.000    0.000      501  see room
ROT      502:__R_   1    :   1 x:   0.000   0.055    0.000    0.000      502  see room
                         :   1 y:   0.000   0.131    0.000    0.000      502  see room
ROT      503:__R_   1    :   1 x:   0.000   0.052    0.000    0.000      503  see room
                         :   1 y:   0.000   0.012    0.000    0.000      503  see room
ROT      504:__R_   1    :   1 x:   0.000   0.076    0.000    0.000      504  see room
                         :   1 y:   0.000   0.001    0.000    0.000      504  see room
ROT      505:__R_   1    :   1 x:   0.000   0.033    0.000    0.000      505  see room
                         :   1 y:   0.000   0.046    0.000    0.000      505  see room
ROT      506:__R_   1    :   1 x:   0.000   0.005    0.000    0.000      506  see room
                         :   1 y:   0.000   0.013    0.000    0.000      506  see room
ROT      507:__R_   1    :   1 x:   0.000   0.174    0.000    0.000      507  see room
                         :   1 y:   0.000   0.103    0.000    0.000      507  see room
ROT      508:__R_   1    :   1 x:   0.000   0.069    0.000    0.000      508  see room
                         :   1 y:   0.000   0.214    0.000    0.000      508  see room
ROT      509:__R_   1    :   1 x:   0.000   0.117    0.000    0.000      509  see room
                         :   1 y:   0.000   0.042    0.000    0.000      509  see room
ROT      510:__R_   1    :   1 x:   0.000   0.028    0.000    0.000      510  see room
                         :   1 y:   0.000   0.004    0.000    0.000      510  see room
ROT      511:__R_   1    :   1 x:   0.000   0.034    0.000    0.000      511  see room
                         :   1 y:   0.000   0.015    0.000    0.000      511  see room
ROT      512:__R_   1    :   1 x:   0.000   0.128    0.000    0.000      512  see room
                         :   1 y:   0.000   0.105    0.000    0.000      512  see room
ROT      513:__R_   1    :   1 x:   0.000   0.018    0.000    0.000      513  see room
                         :   1 y:   0.000   0.072    0.000    0.000      513  see room
IOR 99991000:___I   1    :   1 x:   0.210   0.210    0.210    0.210 99991000  see room
                         :   1 y:  -0.500   0.500    0.500   -0.500 99991000  see room
IOR 99992000:___I   1    :   1 x:   9.398   1.880    9.398    9.398 99992000  see room
                         :   1 y: -14.937   2.987   14.937  -14.937 99992000  see room
ADPA99991000   inactive :                                           0     0.000 ,       1     0.000 ,       2     0.000 ,
                                                                    3     0.000 ,       4     0.000 ,
ADPA99992000   inactive :                                           0     0.000 ,       1     0.000 ,       2     0.000 ,
                                                                    3     0.000 ,       4     0.000 ,

Solutiontime =   637.852 sec.,trace=  4888.000, swei= 1.00E+06, eps= 1.00E-06
REF     9001  :   114 unused points
Count of computed points in:
REF :  683, IOR :    2, ROT :   94, ADPA:    8

pll= 3.6022E+03,pvv= 3.6022E+03,nx= 2345,no= 7233,nt=  0,oeq 165788,neq 295794
IT= -2, s(pll/nobs= 7233)= 7.0571E-01 s(pvv/nred= 4888)= 8.5846E-01 =sigma0

Coord_red:        0.000        0.000        0.000   stored
-->  84 observations without redundancy compared to Qeps= 1.0E-05.

Qmin=   0.00001, Qmax=   0.99928; Sigma_0=    0.858; Sig_apriori=    0.500=Sa
                                                                      inner_
The worst obs.:          point, coo   normalized_discrepancy    r(i)   reliab.
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 1 PLR =      410,nr=      225, qvX =    7.844*S0 =^= 13.47*Sa, r=0.0002,255.8
 2 PHO =       61,nr=     1401, qvY =    7.675*S0 =^= 13.18*Sa, r=0.2667,  7.7
 3 PHO =       11,nr= 64020101, qvX =    7.568*S0 =^= 12.99*Sa, r=0.0567, 16.8
 4 PHO =       11,nr= 64020101, qvY =    7.549*S0 =^= 12.96*Sa, r=0.2997,  7.3
 5 PLR =      104,nr=      208, qvX =    7.522*S0 =^= 12.92*Sa, r=0.1101, 12.1
 6 PHO =       68,nr=     2023, qvY =    6.742*S0 =^= 11.57*Sa, r=0.0094, 41.2
 7 PHO =       69,nr=     2023, qvY =    6.693*S0 =^= 11.49*Sa, r=0.0099, 40.1
 8 PLR =      104,nr=      211, qvX =    6.470*S0 =^= 11.11*Sa, r=0.0594, 16.4
 9 PLR =      111,nr=      252, qvX =    6.442*S0 =^= 11.06*Sa, r=0.2366,  8.2
10 PHO =       68,nr=     1418, qvX =    6.342*S0 =^= 10.89*Sa, r=0.5807,  5.2

                              Sigma_0=    0.858; Sig_apriori=    0.500

        point            X                    Y                    Z           A        B        phi    Pxy      Pxyz    Equ
REF =    9001 subtype=  0
Coord_reduc.:       0.000 #       ,       0.000 #       ,       0.000 #        stored
          101     100.000 # 0.0002,     100.000 # 0.0002,      10.000 # 0.0002 (  0.0002,  0.0002, 125.97,  0.0002,  0.0003)  16
          102     118.682 # 0.0110,     108.642 # 0.0097,      10.035 # 0.0045 (  0.0115,  0.0091,  33.08,  0.0147,  0.0154)  13
          103     118.531 # 0.0153,     128.387 # 0.0152,       9.583 # 0.0057 (  0.0170,  0.0132, -49.60,  0.0215,  0.0223)  13
          104     120.890 # 0.0226,     149.026 # 0.0194,       9.159 # 0.0063 (  0.0253,  0.0158, -38.91,  0.0298,  0.0305)  13
          105     119.421 # 0.0307,     167.663 # 0.0212,       8.694 # 0.0068 (  0.0333,  0.0169, -29.67,  0.0373,  0.0379)  13
          106     111.230 # 0.0313,     168.604 # 0.0190,       8.305 # 0.0070 (  0.0325,  0.0168, -20.46,  0.0366,  0.0372)  12
          107     104.441 # 0.0317,     169.980 # 0.0176,       7.981 # 0.0070 (  0.0323,  0.0166, -13.62,  0.0363,  0.0370)  10
          108      95.489 # 0.0388,     185.773 # 0.0175,       7.686 # 0.0075 (  0.0389,  0.0173,  -5.03,  0.0426,  0.0433)  13
          109      77.624 # 0.0373,     182.872 # 0.0183,       7.727 # 0.0075 (  0.0377,  0.0173,  11.28,  0.0415,  0.0422)  13
          110      72.780 # 0.0254,     155.757 # 0.0162,       8.739 # 0.0072 (  0.0261,  0.0151,  18.12,  0.0301,  0.0309)  13
          111      68.303 # 0.0179,     130.576 # 0.0136,       9.302 # 0.0070 (  0.0182,  0.0131,  18.82,  0.0225,  0.0235)  14
          112      70.115 # 0.0152,     101.412 # 0.0064,       9.712 # 0.0050 (  0.0154,  0.0061,  -9.51,  0.0165,  0.0173)  11
          113      83.989 # 0.0112,     100.000 # 0.0002,       9.845 # 0.0039 (  0.0112,  0.0002,   0.00,  0.0112,  0.0118)  14
          201     113.396 # 0.0149,     118.492 # 0.0126,      23.837 # 0.0134 (  0.0153,  0.0121, -24.96,  0.0195,  0.0236)   4
          204     113.387 # 0.0149,     118.451 # 0.0144,      14.108 # 0.0068 (  0.0159,  0.0132, -44.45,  0.0207,  0.0218)   4
          205     113.341 # 0.0156,     121.105 # 0.0152,      11.015 # 0.0065 (  0.0158,  0.0149, -36.24,  0.0217,  0.0227)   4
          206     113.331 # 0.0156,     122.031 # 0.0133,      21.067 # 0.0109 (  0.0160,  0.0129, -22.55,  0.0205,  0.0233)  12
          207     113.910 # 0.0527,     128.161 # 0.1192,      21.158 # 0.0351 (  0.1280,  0.0248,  75.84,  0.1304,  0.1350)   8
          208     114.657 # 0.0192,     133.922 # 0.0183,      10.947 # 0.0065 (  0.0222,  0.0146, -46.03,  0.0265,  0.0273)  14
          209     114.921 # 0.0186,     133.597 # 0.0169,      14.893 # 0.0082 (  0.0207,  0.0142, -41.89,  0.0251,  0.0264)  14
          210     115.342 # 0.0197,     138.001 # 0.0185,      14.890 # 0.0076 (  0.0217,  0.0161, -42.69,  0.0271,  0.0281)  14
          211     115.000 # 0.0198,     137.708 # 0.0199,      11.072 # 0.0070 (  0.0224,  0.0168, 149.41,  0.0280,  0.0289)  14
          212     114.520 # 0.0195,     135.843 # 0.0190,      11.747 # 0.0069 (  0.0224,  0.0156, -47.62,  0.0273,  0.0282)   4
          213     114.762 # 0.0192,     135.866 # 0.0171,      17.204 # 0.0092 (  0.0210,  0.0149, -38.44,  0.0257,  0.0273)   4
          214     115.453 # 0.0222,     142.502 # 0.0203,      23.750 # 0.0121 (  0.0241,  0.0180, -39.36,  0.0301,  0.0324)  15
          215     115.952 # 0.0221,     142.296 # 0.0199,      26.379 # 0.0134 (  0.0240,  0.0176, -38.57,  0.0298,  0.0327)  16
          216     113.869 # 0.0173,     127.139 # 0.0142,      16.205 # 0.0093 (  0.0179,  0.0134, -25.37,  0.0224,  0.0243)   8
          217     118.194 # 0.0322,     166.824 # 0.0255,      18.642 # 0.0134 (  0.0352,  0.0211, -33.66,  0.0411,  0.0432)  28
          218     117.140 # 0.0278,     159.606 # 0.0238,      10.881 # 0.0074 (  0.0303,  0.0205, -36.33,  0.0366,  0.0373)   4
          219     117.203 # 0.0285,     161.335 # 0.0213,      14.038 # 0.0082 (  0.0305,  0.0184, -29.35,  0.0356,  0.0365)   4
          220     116.900 # 0.0273,     158.157 # 0.0205,      14.092 # 0.0078 (  0.0294,  0.0173, -30.35,  0.0341,  0.0350)  14
          221     117.793 # 0.0315,     166.167 # 0.0220,      10.816 # 0.0071 (  0.0328,  0.0200, -23.24,  0.0384,  0.0391)  10
          222     116.130 # 0.0255,     150.740 # 0.0185,      11.250 # 0.0068 (  0.0271,  0.0162, -27.22,  0.0315,  0.0323)  11
          223      86.250 # 0.0327,     169.531 # 0.0182,      18.150 # 0.0099 (  0.0327,  0.0182,   0.75,  0.0374,  0.0387)  28
          224      86.277 # 0.0327,     169.503 # 0.0185,      16.781 # 0.0097 (  0.0327,  0.0185,   0.53,  0.0376,  0.0388)  25
          225      87.378 # 0.0315,     164.157 # 0.0187,      17.332 # 0.0135 (  0.0315,  0.0187,  -0.14,  0.0367,  0.0391)   8
          226      86.288 # 0.0726,     169.459 # 0.0953,       8.876 # 0.0110 (  0.1162,  0.0290, 140.26,  0.1198,  0.1203)   8
          227      85.073 # 0.0313,     157.433 # 0.0167,       8.920 # 0.0094 (  0.0313,  0.0167,   1.90,  0.0355,  0.0367)   6
          228      84.946 # 0.0317,     155.974 # 0.0166,       8.954 # 0.0095 (  0.0317,  0.0166,  -1.36,  0.0358,  0.0370)   4
          229      84.626 # 0.0318,     154.720 # 0.0166,      10.963 # 0.0091 (  0.0319,  0.0165,  -3.83,  0.0359,  0.0370)   6
          230      84.687 # 0.0325,     169.041 # 0.0205,      10.012 # 0.0107 (  0.0325,  0.0205,   1.77,  0.0384,  0.0399)   6
          231      84.903 # 0.0287,     155.754 # 0.0164,      16.426 # 0.0101 (  0.0287,  0.0164,  -0.77,  0.0330,  0.0345)  20
          232      84.765 # 0.0274,     154.681 # 0.0161,      18.258 # 0.0102 (  0.0274,  0.0161,   2.05,  0.0318,  0.0334)  28
          233      83.053 # 0.0231,     140.075 # 0.0164,      10.961 # 0.0097 (  0.0232,  0.0163,   8.11,  0.0284,  0.0300)   4
          235      81.862 # 0.0210,     127.106 # 0.0143,      11.107 # 0.0088 (  0.0210,  0.0143,  -3.13,  0.0254,  0.0268)   6
          236      81.746 # 0.0215,     127.055 # 0.0372,       9.470 # 0.0123 (  0.0376,  0.0208,  88.47,  0.0429,  0.0447)   4
          237      82.514 # 0.0241,     133.736 # 0.0146,      12.308 # 0.0096 (  0.0242,  0.0145,   6.36,  0.0282,  0.0298)   4
          238      84.024 # 0.0277,     148.496 # 0.0188,      14.678 # 0.0103 (  0.0283,  0.0178, -17.27,  0.0335,  0.0350)  20
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239	83.958 # 0.0266,	148.891 # 0.0170,	10.896 # 0.0093 (	0.0267,	0.0169,	-5.22,	0.0316,	0.0329)	4
240	82.491 # 0.0220,	133.918 # 0.0144,	17.040 # 0.0102 (	0.0221,	0.0142,	7.61,	0.0263,	0.0282)	24
241	88.591 # 0.0282,	148.183 # 0.0166,	25.900 # 0.0158 (	0.0283,	0.0165,	-2.44,	0.0327,	0.0364)	8
242	81.777 # 0.0218,	127.062 # 0.0137,	18.253 # 0.0114 (	0.0218,	0.0137,	3.37,	0.0257,	0.0282)	8
243	82.494 # 0.0216,	133.206 # 0.0138,	25.244 # 0.0133 (	0.0216,	0.0138,	4.19,	0.0256,	0.0289)	26
244	81.878 # 0.0230,	127.115 # 0.0140,	25.304 # 0.0155 (	0.0231,	0.0138,	-7.55,	0.0269,	0.0310)	12
245	82.160 # 0.0225,	130.002 # 0.0137,	21.628 # 0.0128 (	0.0225,	0.0137,	0.99,	0.0264,	0.0293)	14
246	82.235 # 0.0236,	130.038 # 0.0138,	28.747 # 0.0179 (	0.0236,	0.0137,	-3.37,	0.0273,	0.0327)	8
247	86.087 # 0.0251,	147.866 # 0.0158,	21.303 # 0.0108 (	0.0251,	0.0158,	-1.51,	0.0297,	0.0315)	32
248	86.287 # 0.0257,	149.646 # 0.0158,	21.300 # 0.0107 (	0.0257,	0.0158,	-1.11,	0.0301,	0.0320)	34
250	99.824 # 0.0397,	164.993 # 0.0268,	26.768 # 0.0288 (	0.0414,	0.0241,	-22.54,	0.0479,	0.0559)	3
251	88.654 # 0.0272,	148.808 # 0.0165,	25.711 # 0.0159 (	0.0273,	0.0165,	-3.92,	0.0319,	0.0356)	14
252	104.615 # 0.0415,	151.559 # 0.0252,	41.518 # 0.0339 (	0.0416,	0.0252,	-3.47,	0.0486,	0.0593)	19
253	104.724 # 0.0534,	150.374 # 0.0244,	44.809 # 0.0512 (	0.0534,	0.0244,	2.08,	0.0587,	0.0779)	4
254	104.664 # 0.0534,	150.558 # 0.0244,	44.822 # 0.0512 (	0.0534,	0.0244,	2.29,	0.0587,	0.0779)	4
255	98.766 # 0.0354,	148.942 # 0.0195,	32.038 # 0.0210 (	0.0356,	0.0192,	-6.40,	0.0404,	0.0455)	16
256	99.197 # 0.0483,	153.277 # 0.0232,	32.069 # 0.0253 (	0.0483,	0.0232,	-1.85,	0.0536,	0.0592)	16
257	92.548 # 0.0301,	141.116 # 0.0184,	24.153 # 0.0177 (	0.0302,	0.0182,	-7.47,	0.0353,	0.0395)	4
258	104.518 # 0.0525,	149.853 # 0.0236,	43.584 # 0.0478 (	0.0525,	0.0236,	0.77,	0.0575,	0.0748)	8
259	94.101 # 0.0358,	158.138 # 0.0200,	25.934 # 0.0252 (	0.0362,	0.0192,	-11.52,	0.0410,	0.0481)	3
260	94.506 # 0.0508,	138.950 # 0.1129,	25.578 # 0.0492 (	0.1217,	0.0231,	75.27,	0.1238,	0.1332)	3
261	88.381 # 0.0200,	125.981 # 0.0315,	25.328 # 0.0198 (	0.0336,	0.0161,	73.71,	0.0373,	0.0422)	13
262	82.340 # 0.0166,	126.474 # 0.0285,	25.232 # 0.0179 (	0.0287,	0.0162,	90.42,	0.0330,	0.0375)	14
263	88.372 # 0.0244,	125.915 # 0.0515,	11.135 # 0.0115 (	0.0544,	0.0171,	78.02,	0.0570,	0.0581)	4
265	85.531 # 0.0162,	126.255 # 0.0240,	23.424 # 0.0139 (	0.0244,	0.0157,	85.73,	0.0290,	0.0322)	24
266	89.488 # 0.0225,	120.380 # 0.0381,	31.373 # 0.0445 (	0.0416,	0.0149,	71.54,	0.0442,	0.0628)	3
267	89.971 # 0.0232,	120.769 # 0.0268,	13.637 # 0.0094 (	0.0294,	0.0198,	62.67,	0.0355,	0.0367)	10
268	94.833 # 0.0249,	115.315 # 0.0264,	28.089 # 0.0257 (	0.0300,	0.0204,	145.06,	0.0363,	0.0445)	16
269	96.053 # 0.0293,	119.300 # 0.0294,	14.175 # 0.0210 (	0.0356,	0.0213,	50.26,	0.0415,	0.0465)	4
270	105.330 # 0.0134,	114.212 # 0.0182,	13.598 # 0.0070 (	0.0197,	0.0111,	69.68,	0.0226,	0.0237)	14
271	107.577 # 0.0134,	114.043 # 0.0157,	27.990 # 0.0168 (	0.0172,	0.0113,	62.66,	0.0206,	0.0266)	20
272	101.338 # 0.0120,	116.482 # 0.0183,	30.956 # 0.0209 (	0.0186,	0.0116,	86.60,	0.0219,	0.0303)	16
273	101.071 # 0.0129,	118.762 # 0.0210,	16.313 # 0.0087 (	0.0212,	0.0126,	89.39,	0.0246,	0.0261)	20
274	113.073 # 0.0125,	117.293 # 0.0155,	27.991 # 0.0171 (	0.0156,	0.0124,	112.46,	0.0200,	0.0262)	16
275	110.388 # 0.0128,	118.046 # 0.0156,	18.392 # 0.0087 (	0.0158,	0.0126,	116.50,	0.0202,	0.0220)	18
276	112.910 # 0.0134,	117.375 # 0.0166,	13.640 # 0.0064 (	0.0172,	0.0128,	123.47,	0.0214,	0.0223)	10
277	106.107 # 0.0310,	167.686 # 0.0187,	11.516 # 0.0084 (	0.0318,	0.0173,	-17.15,	0.0362,	0.0371)	8
278	94.798 # 0.0331,	169.349 # 0.0177,	18.544 # 0.0113 (	0.0332,	0.0176,	-4.15,	0.0375,	0.0392)	21
279	85.973 # 0.0336,	169.930 # 0.0197,	17.202 # 0.0101 (	0.0336,	0.0197,	2.24,	0.0389,	0.0402)	24
280	106.024 # 0.0335,	167.709 # 0.0192,	14.779 # 0.0101 (	0.0341,	0.0182,	-13.81,	0.0387,	0.0399)	5
281	95.101 # 0.0442,	169.168 # 0.0183,	9.471 # 0.0087 (	0.0442,	0.0182,	2.08,	0.0478,	0.0486)	4
282	87.552 # 0.0342,	169.654 # 0.0200,	13.795 # 0.0099 (	0.0342,	0.0199,	-1.56,	0.0396,	0.0408)	16
283	99.260 # 0.0323,	165.400 # 0.0223,	26.344 # 0.0158 (	0.0335,	0.0205,	-21.31,	0.0393,	0.0423)	28
284	113.089 # 0.0341,	164.111 # 0.0237,	26.309 # 0.0151 (	0.0361,	0.0204,	-26.59,	0.0415,	0.0442)	22
285	93.618 # 0.0319,	158.750 # 0.0237,	26.351 # 0.0162 (	0.0326,	0.0227,	-18.67,	0.0397,	0.0429)	28
286	104.601 # 0.0382,	150.320 # 0.0591,	46.629 # 0.0608 (	0.0646,	0.0278,	129.70,	0.0703,	0.0930)	11
287	104.239 # 0.0449,	150.664 # 0.0707,	43.632 # 0.0715 (	0.0789,	0.0281,	131.53,	0.0837,	0.1101)	4
301	86.206 # 0.0351,	169.570 # 0.0280,	8.141 # 0.0115 (	0.0365,	0.0263,	-25.36,	0.0450,	0.0464)	3
302	81.702 # 0.0301,	126.585 # 0.0158,	9.431 # 0.0103 (	0.0308,	0.0144,	-15.33,	0.0340,	0.0355)	3
303	90.935 # 0.0275,	126.146 # 0.0237,	9.771 # 0.0182 (	0.0284,	0.0226,	27.42,	0.0363,	0.0406)	3
304	89.905 # 0.0184,	120.094 # 0.0250,	9.601 # 0.0120 (	0.0260,	0.0169,	76.37,	0.0310,	0.0332)	3
306	97.028 # 0.0223,	115.007 # 0.0211,	9.755 # 0.0116 (	0.0268,	0.0149,	46.77,	0.0307,	0.0328)	3
307	97.332 # 0.0114,	116.635 # 0.0255,	9.763 # 0.0091 (	0.0257,	0.0108,	110.13,	0.0279,	0.0294)	3
308	97.859 # 0.0111,	116.505 # 0.0256,	9.764 # 0.0090 (	0.0257,	0.0107,	108.22,	0.0279,	0.0293)	3
309	100.195 # 0.0121,	118.811 # 0.0257,	9.821 # 0.0102 (	0.0257,	0.0121,	99.34,	0.0284,	0.0302)	3
310	103.004 # 0.0126,	118.540 # 0.0255,	9.822 # 0.0102 (	0.0257,	0.0121,	89.78,	0.0284,	0.0302)	3
311	104.808 # 0.0126,	115.768 # 0.0248,	9.805 # 0.0089 (	0.0257,	0.0106,	81.16,	0.0278,	0.0292)	3
312	105.363 # 0.0131,	115.790 # 0.0246,	9.814 # 0.0090 (	0.0257,	0.0107,	79.16,	0.0279,	0.0293)	3
313	105.341 # 0.0129,	114.280 # 0.0244,	9.815 # 0.0083 (	0.0257,	0.0098,	77.22,	0.0275,	0.0288)	3
314	107.377 # 0.0150,	114.223 # 0.0233,	9.849 # 0.0087 (	0.0257,	0.0103,	69.54,	0.0277,	0.0291)	3
315	113.726 # 0.0195,	117.469 # 0.0221,	9.771 # 0.0120 (	0.0257,	0.0143,	57.61,	0.0294,	0.0318)	3
317	114.718 # 0.0225,	134.166 # 0.0259,	9.505 # 0.0069 (	0.0309,	0.0151,	142.74,	0.0344,	0.0350)	3
318	115.046 # 0.0213,	137.500 # 0.0281,	9.432 # 0.0078 (	0.0308,	0.0172,	132.72,	0.0353,	0.0361)	3
319	118.228 # 0.0394,	166.722 # 0.0224,	8.689 # 0.0080 (	0.0416,	0.0180,	-23.15,	0.0453,	0.0460)	3

1001	106.933 # 0.1287,	154.622 # 0.1305,	37.016 # 0.1092 (	0.1334,	0.1256,	142.64,	0.1832,	0.2133)	10
1002	103.608 # 0.1375,	154.910 # 0.1987,	37.067 # 0.1352 (	0.2255,	0.0867,	134.25,	0.2416,	0.2769)	16
1003	104.591 # 0.1396,	151.662 # 0.1615,	40.396 # 0.1195 (	0.2099,	0.0392,	145.03,	0.2135,	0.2447)	16
1004	105.364 # 0.1375,	151.344 # 0.1456,	40.519 # 0.1252 (	0.1468,	0.1363,	77.91,	0.2003,	0.2362)	10
1005	104.060 # 0.1375,	153.278 # 0.1540,	39.052 # 0.1189 (	0.2021,	0.0419,	146.09,	0.2064,	0.2382)	16
1006	106.214 # 0.2102,	152.777 # 1.3761,	39.222 # 0.6718 (	1.3851,	0.1383,	107.32,	1.3920,	1.5456)	8
1007	100.965 # 0.1316,	152.869 # 0.0651,	36.896 # 0.0890 (	0.1328,	0.0627,	-9.66,	0.1469,	0.1717)	18
1008	102.261 # 0.0805,	152.150 # 0.0729,	39.053 # 0.0651 (	0.1009,	0.0403,	-45.60,	0.1086,	0.1266)	14
1009	103.671 # 0.0863,	151.201 # 0.0772,	40.289 # 0.0703 (	0.1081,	0.0414,	-45.25,	0.1157,	0.1354)	14
1010	100.185 # 0.1632,	149.265 # 0.0688,	36.674 # 0.1062 (	0.1647,	0.0653,	9.13,	0.1771,	0.2066)	12
1011	101.512 # 0.1764,	149.700 # 0.0724,	38.637 # 0.1186 (	0.1781,	0.0680,	9.60,	0.1906,	0.2245)	12
1012	103.545 # 0.1987,	150.190 # 0.0771,	40.296 # 0.1337 (	0.2007,	0.0717,	9.64,	0.2131,	0.2516)	12
1016	105.949 # 0.2316,	150.819 # 0.1113,	40.473 # 0.1739 (	0.2387,	0.0953,	-16.95,	0.2570,	0.3103)	6
1017	107.937 # 0.4153,	151.420 # 0.1063,	38.610 # 0.2889 (	0.4165,	0.1018,	-4.82,	0.4287,	0.5170)	4
1018	108.836 # 0.1393,	151.970 # 0.0941,	37.215 # 0.1068 (	0.1450,	0.0849,	-22.35,	0.1681,	0.1992)	10
1019	106.129 # 2.8983,	145.491 # 0.1401,	35.141 # 1.9990 (	2.9003,	0.0897,	2.37,	2.9017,	3.5236)	4
1023	110.234 # 0.1355,	152.212 # 0.0917,	33.723 # 0.0956 (	0.1426,	0.0802,	-24.62,	0.1637,	0.1895)	10
1024	103.177 # 0.1327,	155.853 # 0.1870,	33.703 # 0.1167 (	0.2134,	0.0838,	135.13,	0.2293,	0.2573)	16
1025	107.553 # 0.1263,	155.581 # 0.1257,	33.556 # 0.1006 (	0.1328,	0.1188,	-48.70,	0.1782,	0.2046)	10
1026	99.781 # 0.1183,	153.228 # 0.0541,	33.641 # 0.0715 (	0.1183,	0.0540,	-2.09,	0.1300,	0.1484)	20
1027	109.441 # 0.1756,	152.350 # 0.1376,	35.772 # 0.1580 (	0.1844,	0.1257,	-27.29,	0.2231,	0.2734)	6
1028	105.914 # 0.1389,	149.842 # 0.1272,	40.409 # 0.1178 (	0.1532,	0.1094,	-41.30,	0.1883,	0.2221)	6
1029	99.179 # 0.1611,	148.862 # 0.0644,	33.526 # 0.0895 (	0.1630,	0.0596,	10.35,	0.1735,	0.1952)	12
1030	86.255 # 0.0991,	147.638 # 0.0443,	22.295 # 0.0449 (	0.0992,	0.0441,	2.46,	0.1085,	0.1175)	14
1031	86.525 # 0.0701,	149.802 # 0.0437,	22.377 # 0.0398 (	0.0701,	0.0437,	-0.71,	0.0826,	0.0917)	20
1032	87.051 # 0.0699,	149.603 # 0.0412,	23.668 # 0.0411 (	0.0700,	0.0411,	-3.21,	0.0811,	0.0910)	24
1033	87.750 # 0.0867,	149.308 # 0.0428,	24.563 # 0.0476 (	0.0867,	0.0428,	-1.04,	0.0967,	0.1078)	18
1034	88.427 # 0.0921,	148.737 # 0.0460,	25.184 # 0.0504 (	0.0922,	0.0459,	-2.49,	0.1030,	0.1146)	16
1035	88.732 # 0.0820,	148.897 # 0.0545,	25.212 # 0.0490 (	0.0820,	0.0545,	2.81,	0.0984,	0.1100)	20
1036	88.495 # 0.0673,	149.835 # 0.0467,	24.676 # 0.0424 (	0.0674,	0.0467,	-3.09,	0.0820,	0.0923)	28
1037	88.305 # 0.0658,	150.537 # 0.0460,	23.889 # 0.0409 (	0.0658,	0.0460,	-0.51,	0.0803,	0.0901)	28
1038	88.080 # 0.0665,	151.136 # 0.0577,	22.390 # 0.0454 (	0.0682,	0.0557,	-24.77,	0.0881,	0.0991)	26
1039	90.129 # 0.0900,	150.965 # 0.2049,	22.370 # 0.0482 (	0.2204,	0.0384,	124.47,	0.2238,	0.2289)	16
1040	89.886 # 0.0996,	150.381 # 0.2546,	23.827 # 0.0854 (	0.2608,	0.0818,	114.70,	0.2734,	0.2864)	16
1041	86.545 # 0.1359,	147.788 # 0.0415,	23.497 # 0.0598 (	0.1360,	0.0412,	2.30,	0.1421,	0.1541)	14
1042	87.741 # 0.1681,	146.495 # 0.0475,	23.706 # 0.0639 (	0.1682,	0.0473,	1.92,	0.1747,	0.1860)	10
1043	90.628 # 8.2519,	148.134 #10.7038,	24.683 # 4.2092 (	13.5143,	0.1714,	58.19,	13.5154,	14.1556)	4
1044	90.439 # 7.8997,	146.801 # 9.9238,	22.762 # 3.4882 (	12.6830,	0.1661,	57.20,	12.6841,	13.1550)	4
1045	87.474 # 0.1938,	146.046 # 0.0540,	22.333 # 0.0598 (	0.1943,	0.0522,	4.68,	0.2012,	0.2099)	8
1046	87.289 # 0.1427,	147.990 # 0.0429,	24.427 # 0.0654 (	0.1429,	0.0425,	2.87,	0.1490,	0.1628)	14
1047	88.094 # 0.1734,	147.084 # 0.0487,	24.593 # 0.0692 (	0.1737,	0.0479,	3.34,	0.1802,	0.1930)	10
1048	88.695 # 7.2862,	146.566 # 9.7261,	24.484 # 3.9473 (	12.1516,	0.1617,	59.07,	12.1527,	12.7777)	4
1049	88.306 # 0.1629,	148.289 # 0.0474,	25.172 # 0.0720 (	0.1633,	0.0459,	4.82,	0.1696,	0.1842)	12
1050	88.620 # 0.2163,	148.019 # 0.0627,	25.174 # 0.0789 (	0.2185,	0.0546,	9.34,	0.2252,	0.2386)	8
1051	88.764 # 0.5337,	147.841 # 2.2311,	25.360 # 0.3996 (	2.2895,	0.1448,	85.56,	2.2941,	2.3286)	8
1052	89.411 # 0.4912,	149.245 # 2.1033,	24.679 # 0.3614 (	2.1553,	0.1409,	85.96,	2.1599,	2.1899)	8
1054	107.831 # 0.2309,	148.777 # 0.1266,	38.610 # 0.1529 (	0.2386,	0.1115,	-18.39,	0.2633,	0.3045)	4
1056	102.441 # 0.1156,	146.670 # 0.0650,	36.956 # 0.0763 (	0.1159,	0.0643,	6.06,	0.1326,	0.1530)	12
1057	101.957 # 0.1189,	145.443 # 0.0693,	33.509 # 0.0711 (	0.1192,	0.0688,	5.59,	0.1377,	0.1549)	10
1058	104.848 # 0.0795,	150.430 # 0.0765,	44.828 # 0.0687 (	0.0939,	0.0579,	-47.26,	0.1103,	0.1300)	16
1059	106.010 # 0.1148,	145.973 # 0.1284,	36.701 # 0.0990 (	0.1291,	0.1140,	113.74,	0.1722,	0.1987)	6
1060	106.383 # 0.1184,	144.918 # 0.1215,	33.541 # 0.0910 (	0.1231,	0.1168,	133.67,	0.1697,	0.1925)	6
1061	109.926 # 0.1247,	147.706 # 0.1069,	33.560 # 0.0921 (	0.1291,	0.1015,	-27.65,	0.1643,	0.1883)	6
1062	108.904 # 0.1270,	148.172 # 0.1119,	36.696 # 0.0996 (	0.1344,	0.1029,	-33.91,	0.1693,	0.1964)	6
1063	105.725 # 0.1531,	147.129 # 0.2152,	38.581 # 0.1527 (	0.2360,	0.1186,	131.47,	0.2641,	0.3051)	4
1064	105.129 # 0.1154,	149.303 # 0.1516,	40.416 # 0.1179 (	0.1520,	0.1148,	107.24,	0.1905,	0.2240)	6
1065	106.578 # 0.1577,	144.319 # 0.1867,	28.604 # 0.1075 (	0.2119,	0.1218,	139.23,	0.2444,	0.2670)	6
1067	110.451 # 0.1256,	147.437 # 0.0684,	28.611 # 0.0756 (	0.1267,	0.0664,	9.73,	0.1430,	0.1618)	10
1068	110.843 # 0.1095,	152.327 # 0.0620,	28.796 # 0.0699 (	0.1097,	0.0618,	3.90,	0.1259,	0.1440)	12
1105	113.381 # 0.1135,	121.116 # 0.1435,	11.017 # 0.0373 (	0.1788,	0.0391,	141.84,	0.1830,	0.1868)	8
1201	111.943 # 0.1759,	156.431 # 0.0705,	25.965 # 0.1106 (	0.1825,	0.0513,	17.80,	0.1895,	0.2194)	8
1202	112.526 # 0.1366,	156.961 # 0.0609,	26.279 # 0.0930 (	0.1407,	0.0508,	16.48,	0.1496,	0.1761)	10
1203	111.941 # 1.0759,	156.588 # 0.2121,	20.399 # 0.0621 (	1.0950,	0.0581,	11.94,	1.0966,	1.0983)	4
1204	112.438 # 0.1072,	163.553 # 0.0753,	20.348 # 0.0445 (	0.1210,	0.0501,	-34.11,	0.1310,	0.1383)	14

1205	117.370 # 0.1041,	156.079 # 0.0604,	18.695 # 0.0293 (	0.1135,	0.0401,	27.98,	0.1203,	0.1238)	12
1206	113.639 # 0.1944,	119.609 # 0.6836,	24.099 # 0.1998 (	0.7077,	0.0645,	83.24,	0.7107,	0.7382)	12
1207	113.298 # 0.2008,	120.331 # 0.6594,	23.592 # 0.1865 (	0.6863,	0.0641,	82.03,	0.6893,	0.7141)	12
1208	116.046 # 0.1248,	142.886 # 0.2828,	24.062 # 0.1199 (	0.3034,	0.0591,	75.91,	0.3091,	0.3316)	8
1209	115.374 # 0.9368,	142.870 # 1.8581,	24.302 # 0.4808 (	2.0796,	0.0746,	70.33,	2.0809,	2.1357)	4
1210	115.452 # 0.0705,	142.915 # 0.1254,	26.058 # 0.0643 (	0.1308,	0.0600,	79.35,	0.1439,	0.1576)	10
1211	116.076 # 1.0195,	143.787 # 2.9627,	9.368 # 0.1587 (	3.1322,	0.0801,	78.95,	3.1332,	3.1372)	4
1216	117.900 # 0.1502,	166.540 # 0.0468,	10.813 # 0.0235 (	0.1544,	0.0300,	-15.23,	0.1573,	0.1591)	18
1217	117.734 # 0.1423,	166.439 # 0.0448,	10.949 # 0.0239 (	0.1461,	0.0302,	-14.85,	0.1492,	0.1511)	18
1218	115.078 # 0.0660,	137.950 # 0.2516,	10.951 # 0.0608 (	0.2524,	0.0628,	94.69,	0.2601,	0.2671)	10
1219	115.164 # 0.0661,	138.173 # 0.2493,	9.483 # 0.0601 (	0.2502,	0.0625,	94.33,	0.2579,	0.2648)	10
1223	114.666 # 1.2142,	140.223 # 6.7490,	9.420 # 0.5356 (	6.8567,	0.0971,	111.30,	6.8574,	6.8782)	4
1225	116.860 # 0.1104,	156.000 # 0.0610,	18.800 # 0.0292 (	0.1196,	0.0400,	26.80,	0.1261,	0.1294)	12
1231	115.954 # 0.0644,	148.633 # 0.0636,	21.370 # 0.0413 (	0.0715,	0.0555,	48.51,	0.0905,	0.0995)	10
1232	106.752 # 0.1041,	143.995 # 0.0594,	32.895 # 0.0563 (	0.1041,	0.0593,	1.72,	0.1198,	0.1324)	16
1233	106.701 # 0.1033,	144.378 # 0.0591,	32.548 # 0.0558 (	0.1034,	0.0591,	1.48,	0.1191,	0.1315)	16
1234	110.808 # 0.1051,	147.367 # 0.0634,	32.911 # 0.0745 (	0.1052,	0.0632,	-4.03,	0.1227,	0.1436)	12
1235	110.533 # 0.1049,	147.549 # 0.0636,	32.562 # 0.0732 (	0.1051,	0.0633,	-4.67,	0.1227,	0.1429)	12
1237	103.868 # 0.0651,	168.028 # 0.0643,	9.477 # 0.0277 (	0.0859,	0.0316,	-49.54,	0.0915,	0.0956)	6
1238	113.507 # 0.0356,	119.169 # 0.0690,	9.835 # 0.0204 (	0.0744,	0.0222,	125.61,	0.0776,	0.0803)	12
1301	94.990 # 0.0808,	168.662 # 0.0773,	16.736 # 0.0554 (	0.0963,	0.0569,	-47.07,	0.1119,	0.1249)	14
1302	94.902 # 0.1060,	168.509 # 0.0962,	8.055 # 0.0587 (	0.1286,	0.0629,	-44.96,	0.1432,	0.1547)	8
1303	86.128 # 0.0568,	169.609 # 0.0704,	8.205 # 0.0377 (	0.0834,	0.0350,	140.25,	0.0904,	0.0980)	12
1304	86.240 # 0.0464,	169.524 # 0.0478,	18.295 # 0.0158 (	0.0593,	0.0303,	148.37,	0.0666,	0.0685)	24
1305	95.140 # 0.0713,	168.898 # 0.0582,	18.245 # 0.0259 (	0.0857,	0.0334,	-41.23,	0.0920,	0.0956)	16
1306	95.190 # 0.0806,	169.046 # 0.0750,	17.210 # 0.0558 (	0.0947,	0.0561,	-45.28,	0.1101,	0.1234)	14
1307	95.045 # 0.1061,	168.588 # 0.0955,	8.050 # 0.0586 (	0.1282,	0.0628,	-44.52,	0.1427,	0.1543)	8
1308	99.846 # 0.0768,	164.790 # 0.0616,	26.037 # 0.0389 (	0.0921,	0.0348,	-40.62,	0.0984,	0.1058)	24
1309	106.165 # 0.1412,	155.670 # 0.1547,	28.801 # 0.0657 (	0.2029,	0.0519,	146.70,	0.2095,	0.2195)	12
1310	117.347 # 0.0650,	156.442 # 0.0466,	26.269 # 0.0476 (	0.0652,	0.0463,	-6.97,	0.0800,	0.0931)	18
1311	95.029 # 0.0809,	168.645 # 0.0777,	17.438 # 0.0570 (	0.0965,	0.0573,	-47.32,	0.1122,	0.1259)	14
1312	86.247 # 0.0732,	169.624 # 0.0869,	17.349 # 0.0186 (	0.1091,	0.0318,	143.57,	0.1136,	0.1151)	8
1313	118.049 # 0.1426,	166.718 # 0.0469,	8.661 # 0.0321 (	0.1470,	0.0301,	-16.09,	0.1501,	0.1535)	16
1314	98.583 # 0.0918,	168.778 # 0.0634,	8.035 # 0.0483 (	0.1054,	0.0368,	-35.07,	0.1116,	0.1216)	8
1315	111.395 # 0.0785,	152.549 # 0.0587,	32.842 # 0.0634 (	0.0790,	0.0581,	-9.70,	0.0980,	0.1167)	20
1316	111.103 # 0.0751,	152.464 # 0.0516,	32.518 # 0.0595 (	0.0751,	0.0515,	2.80,	0.0911,	0.1088)	22
1317	108.007 # 0.0549,	156.531 # 0.0431,	32.828 # 0.0354 (	0.0601,	0.0355,	-33.57,	0.0698,	0.0783)	30
1318	107.895 # 0.0549,	156.249 # 0.0432,	32.531 # 0.0353 (	0.0601,	0.0356,	-33.68,	0.0699,	0.0783)	30
1319	102.884 # 0.0544,	156.693 # 0.0446,	32.536 # 0.0345 (	0.0628,	0.0316,	-39.33,	0.0703,	0.0783)	38
1320	99.047 # 0.0490,	153.539 # 0.0451,	32.525 # 0.0341 (	0.0578,	0.0330,	-44.78,	0.0666,	0.0748)	34
1322	102.827 # 1.0064,	156.835 # 1.0445,	27.637 # 0.2879 (	1.4496,	0.0511,	148.82,	1.4505,	1.4788)	4
1323	107.745 # 0.1199,	156.163 # 0.1163,	29.190 # 0.0851 (	0.1338,	0.1000,	-46.57,	0.1670,	0.1875)	12
1324	95.013 # 0.0761,	168.729 # 0.0628,	18.209 # 0.0261 (	0.0928,	0.0336,	-42.04,	0.0987,	0.1021)	14
1401	84.883 # 0.0760,	153.581 # 0.2342,	17.284 # 0.0230 (	0.2435,	0.0362,	117.91,	0.2462,	0.2473)	11
1402	84.753 # 0.0418,	154.791 # 0.0918,	16.751 # 0.0218 (	0.0953,	0.0329,	118.59,	0.1008,	0.1031)	14
1403	92.308 # 0.0454,	144.662 # 0.0540,	26.427 # 0.0310 (	0.0609,	0.0355,	138.61,	0.0705,	0.0770)	24
1404	92.997 # 0.0475,	145.172 # 0.0610,	25.967 # 0.0321 (	0.0683,	0.0363,	135.61,	0.0774,	0.0838)	20
1405	94.123 # 0.0492,	158.157 # 0.0515,	25.874 # 0.0287 (	0.0640,	0.0313,	147.59,	0.0712,	0.0768)	24
1406	84.909 # 0.0976,	154.256 # 0.3232,	17.385 # 0.0234 (	0.3360,	0.0335,	117.69,	0.3376,	0.3384)	6
1407	87.955 # 0.0390,	151.301 # 0.0496,	21.740 # 0.0245 (	0.0538,	0.0329,	132.73,	0.0631,	0.0677)	22
1408	86.250 # 0.0341,	149.860 # 0.0361,	21.697 # 0.0218 (	0.0376,	0.0324,	137.21,	0.0496,	0.0542)	30
1409	86.059 # 0.0342,	147.555 # 0.0365,	21.699 # 0.0225 (	0.0380,	0.0326,	136.35,	0.0501,	0.0549)	30
1410	87.307 # 0.1364,	145.828 # 0.0424,	21.640 # 0.0523 (	0.1365,	0.0420,	-2.87,	0.1428,	0.1521)	14
1411	87.901 # 0.0389,	151.608 # 0.0494,	22.020 # 0.0245 (	0.0536,	0.0329,	132.73,	0.0629,	0.0675)	22
1412	86.034 # 0.0340,	150.030 # 0.0360,	22.037 # 0.0219 (	0.0374,	0.0324,	136.50,	0.0495,	0.0541)	30
1413	85.792 # 0.0341,	147.484 # 0.0364,	22.045 # 0.0226 (	0.0378,	0.0325,	135.60,	0.0499,	0.0548)	30
1414	82.148 # 0.0382,	133.780 # 0.0612,	17.367 # 0.0307 (	0.0614,	0.0381,	104.72,	0.0722,	0.0784)	18
1415	84.458 # 0.0431,	155.303 # 0.0500,	17.307 # 0.0286 (	0.0512,	0.0416,	124.53,	0.0660,	0.0719)	18
1416	84.583 # 0.1823,	154.721 # 0.0634,	16.955 # 0.0734 (	0.1858,	0.0523,	12.89,	0.1930,	0.2065)	10
1417	84.589 # 0.0421,	154.731 # 0.0805,	8.830 # 0.0356 (	0.0833,	0.0363,	118.44,	0.0909,	0.0976)	13
1418	82.330 # 0.0592,	133.426 # 0.0711,	9.408 # 0.0329 (	0.0857,	0.0349,	58.15,	0.0925,	0.0982)	11
1419	84.706 # 0.0442,	154.890 # 0.0867,	8.848 # 0.0373 (	0.0903,	0.0363,	119.68,	0.0973,	0.1042)	9
1420	98.298 # 0.0482,	148.488 # 0.0482,	32.892 # 0.0348 (	0.0589,	0.0344,	-49.98,	0.0682,	0.0765)	38
1421	98.667 # 0.0492,	148.648 # 0.0486,	32.530 # 0.0348 (	0.0600,	0.0344,	-49.14,	0.0692,	0.0774)	34

1422	101.729 # 0.1051,	144.863 # 0.0599,	32.498 # 0.0599 (	0.1055,	0.0593,	-6.45,	0.1210,	0.1350)	16
1424	90.634 # 0.1762,	150.238 # 0.4039,	21.926 # 0.0591 (	0.4393,	0.0352,	125.80,	0.4407,	0.4446)	8
1425	90.574 # 0.1709,	151.147 # 0.3822,	22.145 # 0.0601 (	0.4173,	0.0349,	126.37,	0.4187,	0.4230)	8
1426	89.202 # 0.0458,	156.516 # 0.0689,	19.844 # 0.0227 (	0.0760,	0.0328,	130.91,	0.0827,	0.0858)	14
1427	88.997 # 0.0409,	154.199 # 0.0521,	19.830 # 0.0230 (	0.0575,	0.0329,	134.58,	0.0663,	0.0701)	14
1428	89.257 # 0.0565,	156.584 # 0.0769,	17.772 # 0.0343 (	0.0837,	0.0458,	131.39,	0.0954,	0.1014)	4
1429	89.098 # 0.0566,	154.211 # 0.0757,	17.787 # 0.0359 (	0.0818,	0.0474,	130.70,	0.0945,	0.1011)	4
1430	94.097 # 0.0610,	155.900 # 0.0791,	21.400 # 0.0267 (	0.0943,	0.0329,	139.49,	0.0999,	0.1034)	12
1431	95.656 # 0.7540,	153.748 # 1.1955,	18.532 # 0.0798 (	1.4126,	0.0491,	135.79,	1.4135,	1.4157)	4
1432	93.865 # 0.0647,	153.738 # 0.0670,	21.517 # 0.0379 (	0.0806,	0.0467,	147.77,	0.0932,	0.1006)	8
1433	98.517 # 0.1643,	158.062 # 0.1855,	26.399 # 0.0704 (	0.2456,	0.0326,	146.01,	0.2478,	0.2576)	10
1434	98.789 # 0.1674,	157.766 # 0.1891,	25.873 # 0.0672 (	0.2505,	0.0327,	146.00,	0.2526,	0.2614)	10
1435	93.372 # 0.4236,	163.063 # 0.5262,	18.644 # 0.0514 (	0.6743,	0.0402,	143.10,	0.6755,	0.6775)	4
1436	93.344 # 0.4160,	163.260 # 0.5126,	18.383 # 0.0559 (	0.6590,	0.0400,	143.35,	0.6602,	0.6625)	4
1437	94.331 # 0.5820,	158.056 # 0.8495,	18.618 # 0.0650 (	1.0288,	0.0448,	138.20,	1.0297,	1.0318)	4
1438	98.645 # 0.7550,	157.621 # 0.9035,	20.426 # 0.0421 (	1.1765,	0.0467,	144.30,	1.1774,	1.1782)	4
1439	87.458 # 0.2834,	145.852 # 0.0480,	18.790 # 0.0510 (	0.2836,	0.0467,	-2.54,	0.2875,	0.2920)	6
1440	85.972 # 0.0504,	147.584 # 0.0427,	18.112 # 0.0303 (	0.0515,	0.0415,	-22.05,	0.0661,	0.0727)	12
1441	86.364 # 0.0494,	149.966 # 0.0429,	18.060 # 0.0298 (	0.0502,	0.0420,	-21.41,	0.0654,	0.0719)	10
1442	88.094 # 0.0553,	151.371 # 0.0748,	18.118 # 0.0362 (	0.0798,	0.0476,	128.82,	0.0930,	0.0998)	6
1443	101.532 # 0.1108,	144.531 # 0.0604,	32.904 # 0.0625 (	0.1110,	0.0601,	-4.38,	0.1262,	0.1408)	14
1444	91.688 # 0.4816,	133.875 # 0.1513,	24.384 # 0.1225 (	0.4981,	0.0821,	-16.67,	0.5048,	0.5194)	4
1445	98.976 # 0.0722,	153.536 # 0.0588,	28.568 # 0.0651 (	0.0794,	0.0486,	-35.28,	0.0931,	0.1136)	9
1446	98.510 # 0.1748,	148.633 # 0.0689,	28.608 # 0.0743 (	0.1772,	0.0625,	11.24,	0.1879,	0.2020)	8
1447	100.963 # 1.6142,	151.804 # 0.2406,	29.372 # 0.4643 (	1.6305,	0.0691,	9.04,	1.6320,	1.6968)	6
1448	93.677 # 0.0529,	152.642 # 0.0668,	21.570 # 0.0276 (	0.0781,	0.0340,	139.10,	0.0852,	0.0895)	10
1449	93.688 # 0.0502,	152.577 # 0.0589,	25.013 # 0.0302 (	0.0696,	0.0339,	141.75,	0.0774,	0.0831)	14
1450	101.618 # 0.1284,	144.796 # 0.1049,	28.613 # 0.0813 (	0.1300,	0.1030,	16.40,	0.1658,	0.1846)	6
1451	89.259 # 1.1379,	145.577 # 0.0570,	21.668 # 0.1586 (	1.1379,	0.0570,	0.00,	1.1393,	1.1503)	4
1452	89.134 # 1.1425,	145.302 # 0.0581,	21.933 # 0.1703 (	1.1425,	0.0569,	-0.65,	1.1439,	1.1566)	4
1453	89.355 # 1.1240,	145.619 # 0.0572,	19.018 # 0.0660 (	1.1240,	0.0572,	0.08,	1.1254,	1.1274)	4
1454	91.880 # 0.4840,	133.862 # 0.1524,	22.717 # 0.1033 (	0.5005,	0.0832,	-16.65,	0.5074,	0.5178)	4
1455	92.022 # 0.4820,	133.866 # 0.1521,	20.720 # 0.0851 (	0.4983,	0.0845,	-16.59,	0.5054,	0.5125)	4
1456	92.453 # 1.4475,	145.207 # 0.0670,	24.309 # 0.3017 (	1.4476,	0.0643,	-0.83,	1.4490,	1.4801)	4
1458	97.122 # 1.9874,	144.185 # 0.1117,	26.342 # 0.4721 (	1.9891,	0.0756,	-2.63,	1.9906,	2.0458)	4
1459	95.380 # 1.7684,	144.691 # 0.0868,	25.639 # 0.4054 (	1.7691,	0.0713,	-1.78,	1.7705,	1.8164)	4
1460	92.767 # 0.4319,	143.182 # 0.0786,	20.788 # 0.0832 (	0.4351,	0.0579,	-7.87,	0.4390,	0.4468)	6
1461	99.193 # 0.9644,	136.852 # 0.1909,	26.654 # 0.2393 (	0.9774,	0.1058,	-10.46,	0.9831,	1.0118)	4
1462	84.079 # 0.1484,	135.978 # 0.0561,	18.048 # 0.0471 (	0.1489,	0.0546,	-5.86,	0.1586,	0.1655)	6
1463	103.073 # 0.1354,	147.508 # 0.2260,	38.576 # 0.1535 (	0.2359,	0.1172,	78.57,	0.2635,	0.3049)	4
1464	104.203 # 0.1339,	149.425 # 0.1249,	40.376 # 0.1152 (	0.1479,	0.1079,	42.73,	0.1831,	0.2164)	6
1602	97.162 # 0.0400,	114.830 # 0.0303,	29.097 # 0.0316 (	0.0423,	0.0270,	-27.80,	0.0502,	0.0593)	16
1603	97.441 # 0.1041,	116.840 # 0.0903,	29.305 # 0.0909 (	0.1342,	0.0310,	-44.97,	0.1378,	0.1651)	12
1604	101.433 # 0.0879,	116.791 # 0.0897,	30.162 # 0.0948 (	0.1221,	0.0295,	149.27,	0.1256,	0.1574)	12
1605	97.364 # 0.1009,	116.747 # 0.0870,	27.947 # 0.0821 (	0.1297,	0.0304,	-44.78,	0.1332,	0.1565)	12
1606	105.299 # 0.0980,	115.997 # 0.0554,	27.884 # 0.0615 (	0.1024,	0.0466,	21.28,	0.1125,	0.1282)	8
1607	105.322 # 0.0341,	114.093 # 0.0321,	29.073 # 0.0349 (	0.0397,	0.0249,	-45.47,	0.0469,	0.0584)	16
1609	105.217 # 0.1003,	115.954 # 0.0557,	28.987 # 0.0641 (	0.1047,	0.0469,	20.79,	0.1148,	0.1315)	8
1624	96.934 # 0.0693,	117.215 # 0.0676,	26.880 # 0.0588 (	0.0923,	0.0294,	-49.04,	0.0968,	0.1133)	16
1625	96.665 # 0.0407,	115.538 # 0.0306,	26.858 # 0.0297 (	0.0432,	0.0270,	-28.13,	0.0509,	0.0590)	16
1626	95.664 # 0.0412,	115.727 # 0.0306,	26.874 # 0.0296 (	0.0434,	0.0275,	-26.14,	0.0513,	0.0592)	16
1627	105.783 # 0.0796,	116.255 # 0.0541,	26.787 # 0.0555 (	0.0854,	0.0444,	27.83,	0.0962,	0.1111)	10
1628	105.890 # 0.0338,	114.698 # 0.0332,	26.861 # 0.0325 (	0.0406,	0.0244,	-48.79,	0.0474,	0.0575)	16
1629	106.915 # 0.0553,	114.735 # 0.0682,	26.950 # 0.0680 (	0.0841,	0.0250,	142.07,	0.0878,	0.1111)	12
1663	106.773 # 0.0443,	115.039 # 0.0549,	14.190 # 0.0205 (	0.0668,	0.0228,	141.42,	0.0706,	0.0735)	12
1664	106.014 # 0.0385,	114.890 # 0.0417,	14.191 # 0.0195 (	0.0520,	0.0227,	146.24,	0.0568,	0.0600)	14
1665	107.027 # 0.2440,	116.347 # 0.3182,	28.960 # 0.3258 (	0.4001,	0.0272,	141.57,	0.4010,	0.5167)	8
1666	107.618 # 0.1841,	115.509 # 0.2390,	14.015 # 0.0383 (	0.3008,	0.0230,	141.68,	0.3017,	0.3041)	8
1667	107.320 # 0.0411,	114.257 # 0.0504,	13.562 # 0.0195 (	0.0609,	0.0229,	141.36,	0.0651,	0.0679)	8
1668	107.340 # 0.1918,	115.870 # 0.2495,	13.527 # 0.0331 (	0.3138,	0.0237,	141.62,	0.3147,	0.3164)	4
1669	105.384 # 0.0381,	114.263 # 0.0394,	9.836 # 0.0184 (	0.0494,	0.0238,	148.36,	0.0548,	0.0578)	10
1670	107.321 # 0.0394,	114.243 # 0.0486,	9.859 # 0.0187 (	0.0580,	0.0234,	140.74,	0.0625,	0.0653)	8
1671	107.377 # 0.1809,	115.763 # 0.2346,	9.814 # 0.0347 (	0.2952,	0.0240,	141.71,	0.2962,	0.2982)	4
1672	96.632 # 0.0742,	115.970 # 0.0637,	14.076 # 0.0255 (	0.0937,	0.0281,	-44.20,	0.0978,	0.1011)	12

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1673     95.828 # 0.0437,    115.880 # 0.0311,     14.116 # 0.0215 (  0.0466,  0.0266, -27.70,  0.0537,  0.0578)  16
1674     95.051 # 0.0447,    115.515 # 0.0309,     13.559 # 0.0216 (  0.0471,  0.0270, -25.22,  0.0543,  0.0584)  12
1675     95.066 # 0.0446,    115.399 # 0.0313,      9.664 # 0.0211 (  0.0469,  0.0279, -24.80,  0.0545,  0.0585)  12
1676     96.963 # 0.0432,    115.053 # 0.0315,      9.712 # 0.0205 (  0.0462,  0.0270, -28.61,  0.0535,  0.0573)  12
1677     97.335 # 0.0709,    116.654 # 0.0655,      9.743 # 0.0247 (  0.0920,  0.0292, -46.91,  0.0966,  0.0997)   8
1678     97.314 # 0.0751,    116.846 # 0.0687,     13.478 # 0.0255 (  0.0976,  0.0288, -46.59,  0.1018,  0.1049)   8
1679     97.030 # 0.0433,    115.172 # 0.0312,     13.526 # 0.0210 (  0.0465,  0.0261, -29.16,  0.0534,  0.0573)  12
1680    105.414 # 0.0752,    116.017 # 0.0735,     13.717 # 0.0474 (  0.0893,  0.0555,  48.40,  0.1051,  0.1153)   6
1681    105.423 # 0.0720,    116.157 # 0.0730,      9.730 # 0.0440 (  0.0873,  0.0538,  51.00,  0.1025,  0.1116)   6
1682    105.824 # 0.0778,    116.338 # 0.0748,     14.273 # 0.0487 (  0.0922,  0.0561,  47.29,  0.1079,  0.1184)   6
1683    101.423 # 0.0516,    116.755 # 0.0704,     22.066 # 0.0477 (  0.0807,  0.0334, 136.08,  0.0873,  0.0995)  10
1684    102.186 # 0.1635,    116.294 # 1.1777,     21.698 # 0.6887 (  1.1878,  0.0542,  91.70,  1.1890,  1.3741)   8
1685    101.682 # 0.0746,    118.629 # 0.0999,     20.505 # 0.0537 (  0.1192,  0.0367, 138.84,  0.1247,  0.1358)   6
1686    100.423 # 0.0547,    117.005 # 0.0729,     22.065 # 0.0488 (  0.0846,  0.0339, 137.40,  0.0912,  0.1034)  10
1687    100.923 # 0.0779,    118.783 # 0.1016,     20.370 # 0.0538 (  0.1225,  0.0372, 139.88,  0.1280,  0.1389)   6
1688    102.368 # 0.0714,    118.464 # 0.0979,     20.354 # 0.0524 (  0.1157,  0.0361, 137.89,  0.1212,  0.1321)   6
1689     99.908 # 0.0553,    116.890 # 0.0723,     21.582 # 0.0473 (  0.0845,  0.0338, 138.27,  0.0910,  0.1026)  10
1690    102.946 # 0.2140,    116.530 # 1.2059,     21.539 # 0.6849 (  1.2236,  0.0544,  89.17,  1.2248,  1.4033)   8
1691     99.277 # 0.0569,    117.040 # 0.0734,     21.145 # 0.0465 (  0.0864,  0.0340, 138.91,  0.0929,  0.1039)  10
1692    103.659 # 0.2660,    117.011 # 1.2638,     21.372 # 0.6872 (  1.2903,  0.0550,  87.06,  1.2915,  1.4629)   8
1693     98.732 # 0.0584,    117.269 # 0.0749,     20.635 # 0.0455 (  0.0886,  0.0343, 139.24,  0.0950,  0.1053)  10
1694    104.109 # 0.2866,    116.588 # 1.1946,     20.574 # 0.6115 (  1.2273,  0.0530,  85.25,  1.2285,  1.3723)   8
1695     98.394 # 0.0583,    117.234 # 0.0744,     19.877 # 0.0433 (  0.0882,  0.0342, 139.55,  0.0945,  0.1040)  10
1696    104.474 # 0.3048,    116.504 # 1.1677,     19.833 # 0.5519 (  1.2057,  0.0519,  83.96,  1.2068,  1.3270)   8
1697     98.230 # 0.0579,    117.245 # 0.0739,     19.103 # 0.0410 (  0.0875,  0.0340, 139.52,  0.0939,  0.1025)  10
1698    104.857 # 0.3336,    116.935 # 1.2116,     19.477 # 0.5352 (  1.2556,  0.0523,  83.08,  1.2567,  1.3660)   8
1699    100.342 # 0.0801,    118.855 # 0.1023,     20.074 # 0.0529 (  0.1244,  0.0375, 140.69,  0.1299,  0.1403)   6
1700    103.028 # 0.3379,    118.408 # 2.0422,     19.798 # 0.8711 (  2.0684,  0.0803,  89.85,  2.0700,  2.2458)   4
1701    100.015 # 0.0805,    118.779 # 0.1013,     19.501 # 0.0506 (  0.1239,  0.0374, 141.28,  0.1294,  0.1389)   6
1702    101.672 # 0.1506,    119.228 # 1.8283,     19.031 # 0.6776 (  1.8333,  0.0667,  95.30,  1.8345,  1.9556)   6
1703    103.188 # 0.3468,    118.083 # 1.9678,     19.254 # 0.7982 (  1.9966,  0.0786,  89.17,  1.9982,  2.1517)   4
1704    103.335 # 0.2447,    118.381 # 1.3620,     18.812 # 0.5111 (  1.3827,  0.0555,  88.96,  1.3838,  1.4752)   8
1705     99.799 # 0.0650,    118.848 # 0.0871,     18.927 # 0.0439 (  0.1025,  0.0363, 138.08,  0.1087,  0.1173)   8
1706     99.821 # 0.0548,    118.400 # 0.0770,     17.680 # 0.0372 (  0.0881,  0.0343, 135.29,  0.0945,  0.1016)  10
1707    103.216 # 0.2245,    117.799 # 1.2535,     17.563 # 0.4027 (  1.2724,  0.0529,  89.02,  1.2735,  1.3356)   8
1708     98.310 # 0.0786,    117.068 # 0.0870,     17.605 # 0.0418 (  0.1116,  0.0358, 146.06,  0.1172,  0.1245)   6
1709    104.770 # 0.4722,    116.879 # 1.7292,     17.817 # 0.6110 (  1.7911,  0.0721,  83.21,  1.7925,  1.8938)   4
1710     99.905 # 0.0535,    118.416 # 0.0759,     16.669 # 0.0346 (  0.0864,  0.0340, 134.82,  0.0929,  0.0991)  10
1711     98.612 # 0.0773,    117.250 # 0.0871,     16.605 # 0.0388 (  0.1109,  0.0357, 145.32,  0.1165,  0.1227)   6
1712    103.255 # 0.2273,    118.296 # 1.2888,     16.681 # 0.3456 (  1.3076,  0.0530,  89.18,  1.3086,  1.3535)   8
1714    104.040 # 0.3377,    115.887 # 1.2845,     16.378 # 0.3696 (  1.3270,  0.0552,  83.83,  1.3281,  1.3786)   6
1716    100.038 # 0.0699,    118.243 # 0.0873,      9.789 # 0.0308 (  0.1062,  0.0351, 141.26,  0.1118,  0.1160)   6
1717     98.644 # 0.0705,    117.165 # 0.0808,      9.750 # 0.0304 (  0.1014,  0.0349, 144.52,  0.1073,  0.1115)   6
1718    103.178 # 0.3065,    118.147 # 1.7493,      9.724 # 0.1737 (  1.7746,  0.0702,  89.24,  1.7759,  1.7844)   4
1719    104.095 # 0.3528,    116.299 # 1.4443,      9.825 # 0.1509 (  1.4854,  0.0633,  84.97,  1.4867,  1.4944)   4
1720     98.264 # 0.0713,    117.028 # 0.0803,      9.792 # 0.0304 (  0.1015,  0.0350, 145.16,  0.1074,  0.1116)   6
1721    104.518 # 0.3863,    116.204 # 1.4345,      9.859 # 0.1480 (  1.4843,  0.0628,  83.45,  1.4856,  1.4930)   4
1722    101.604 # 0.1781,    118.960 # 1.8817,      9.806 # 0.1724 (  1.8886,  0.0734,  94.52,  1.8901,  1.8979)   4
1723     97.948 # 0.0550,    116.433 # 0.0683,     17.570 # 0.0359 (  0.0813,  0.0329, 140.42,  0.0877,  0.0948)  10
1724     97.861 # 0.0709,    116.589 # 0.0778,      9.775 # 0.0301 (  0.0993,  0.0349, 146.19,  0.1053,  0.1095)   6
1725     96.934 # 0.0584,    116.682 # 0.0713,     17.577 # 0.0368 (  0.0858,  0.0334, 141.37,  0.0921,  0.0992)  10
1726    104.794 # 0.3963,    115.647 # 1.3477,      9.832 # 0.1457 (  1.4034,  0.0606,  81.98,  1.4047,  1.4123)   4
1727    104.853 # 0.4037,    115.740 # 1.2951,     17.551 # 0.4650 (  1.3554,  0.0557,  80.92,  1.3565,  1.4340)   6
1728    105.716 # 0.3532,    115.682 # 1.0235,     17.537 # 0.3686 (  1.0817,  0.0470,  79.00,  1.0828,  1.1438)   8
1729    100.233 # 0.0727,    119.211 # 0.0947,      9.836 # 0.0318 (  0.1139,  0.0359, 139.75,  0.1194,  0.1236)   6
1730    103.118 # 0.3073,    118.519 # 1.8189,      9.821 # 0.1690 (  1.8432,  0.0716,  89.62,  1.8446,  1.8524)   4
1731     90.536 # 0.0655,    119.939 # 0.0414,      9.525 # 0.0301 (  0.0684,  0.0363,  22.31,  0.0775,  0.0831)  10
1732     89.726 # 0.0676,    120.532 # 0.0429,     13.523 # 0.0312 (  0.0714,  0.0363,  24.32,  0.0801,  0.0860)  10
1733     89.698 # 0.0664,    120.649 # 0.0424,      9.573 # 0.0300 (  0.0700,  0.0361,  24.18,  0.0788,  0.0843)  10
1734     92.397 # 0.0682,    119.460 # 0.0441,     13.561 # 0.0328 (  0.0713,  0.0388,  22.71,  0.0812,  0.0876)   8
1735     92.434 # 0.0664,    119.590 # 0.0436,      9.548 # 0.0316 (  0.0694,  0.0387,  22.65,  0.0795,  0.0855)   8
1736     92.268 # 0.0691,    119.723 # 0.0447,     14.142 # 0.0332 (  0.0725,  0.0389,  23.34,  0.0823,  0.0887)   8
1737     90.757 # 0.0679,    120.011 # 0.0426,     14.113 # 0.0318 (  0.0713,  0.0367,  23.05,  0.0801,  0.0862)  10
1738     90.761 # 0.0446,    119.910 # 0.0415,     26.753 # 0.0389 (  0.0505,  0.0340,  43.93,  0.0609,  0.0723)  18
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1739	92.031 # 0.0452,	119.422 # 0.0430,	26.633 # 0.0399 (	0.0519,	0.0347,	45.90,	0.0624,	0.0740)	16
1740	94.302 # 0.0571,	117.987 # 0.0433,	26.593 # 0.0437 (	0.0595,	0.0400,	24.70,	0.0717,	0.0839)	12
1741	94.499 # 0.4912,	118.180 # 1.7727,	14.360 # 0.2726 (	1.8382,	0.0705,	117.05,	1.8395,	1.8596)	4
1742	93.871 # 0.0671,	118.350 # 0.0434,	14.117 # 0.0334 (	0.0696,	0.0393,	20.78,	0.0799,	0.0866)	8
1743	93.903 # 0.0667,	118.326 # 0.0433,	13.580 # 0.0330 (	0.0692,	0.0393,	20.69,	0.0796,	0.0861)	8
1744	93.271 # 0.0575,	118.733 # 0.0436,	26.581 # 0.0435 (	0.0601,	0.0399,	25.60,	0.0722,	0.0843)	12
1745	93.874 # 0.0647,	118.407 # 0.0427,	9.674 # 0.0317 (	0.0669,	0.0391,	20.49,	0.0775,	0.0837)	8
1746	108.577 # 0.0434,	117.091 # 0.0676,	14.218 # 0.0213 (	0.0769,	0.0230,	133.39,	0.0803,	0.0831)	12
1747	109.029 # 0.0375,	117.208 # 0.0623,	26.917 # 0.0545 (	0.0682,	0.0252,	128.85,	0.0727,	0.0909)	16
1748	110.076 # 0.0354,	117.540 # 0.0640,	26.915 # 0.0550 (	0.0687,	0.0251,	125.55,	0.0731,	0.0915)	16
1749	111.547 # 0.0324,	117.839 # 0.0656,	26.965 # 0.0556 (	0.0688,	0.0248,	121.03,	0.0731,	0.0919)	16
1750	112.583 # 0.0301,	117.772 # 0.0652,	26.927 # 0.0554 (	0.0676,	0.0244,	118.02,	0.0718,	0.0907)	16
1751	109.995 # 0.0405,	117.881 # 0.0731,	14.265 # 0.0215 (	0.0804,	0.0229,	128.56,	0.0836,	0.0863)	12
1752	111.382 # 0.0364,	117.861 # 0.0732,	14.253 # 0.0212 (	0.0786,	0.0226,	124.75,	0.0818,	0.0845)	12
1753	112.556 # 0.0444,	117.805 # 0.1033,	14.230 # 0.0233 (	0.1102,	0.0224,	123.14,	0.1124,	0.1148)	10
1754	112.940 # 0.0406,	117.288 # 0.0949,	9.762 # 0.0215 (	0.1007,	0.0230,	122.18,	0.1032,	0.1054)	6
1755	113.549 # 0.0388,	117.736 # 0.0997,	9.745 # 0.0219 (	0.1045,	0.0230,	119.80,	0.1070,	0.1092)	6
1756	113.526 # 0.0403,	118.010 # 0.1062,	13.672 # 0.0219 (	0.1113,	0.0227,	119.77,	0.1136,	0.1157)	6
1757	110.903 # 0.0374,	117.736 # 0.0720,	13.532 # 0.0203 (	0.0778,	0.0230,	125.96,	0.0812,	0.0837)	8
1758	110.780 # 0.0494,	117.490 # 0.0943,	9.736 # 0.0218 (	0.1039,	0.0234,	128.32,	0.1065,	0.1087)	6
1759	109.569 # 0.0388,	117.080 # 0.0649,	9.763 # 0.0200 (	0.0719,	0.0233,	130.11,	0.0756,	0.0782)	8
1760	109.638 # 0.0405,	117.344 # 0.0692,	13.521 # 0.0204 (	0.0767,	0.0232,	129.95,	0.0801,	0.0827)	8
1762	96.941 # 0.0823,	117.104 # 0.1648,	14.264 # 0.0620 (	0.1734,	0.0622,	121.62,	0.1843,	0.1944)	8
1763	90.177 # 0.0492,	119.569 # 0.0412,	27.783 # 0.0417 (	0.0532,	0.0359,	34.47,	0.0641,	0.0765)	16
1764	92.449 # 0.0506,	118.918 # 0.0432,	27.745 # 0.0432 (	0.0551,	0.0372,	36.31,	0.0665,	0.0793)	14
1765	93.964 # 0.0680,	117.931 # 0.0453,	27.761 # 0.0483 (	0.0709,	0.0406,	22.65,	0.0817,	0.0949)	10
1766	110.848 # 0.0385,	117.272 # 0.0728,	28.002 # 0.0669 (	0.0783,	0.0254,	125.48,	0.0824,	0.1061)	14
1767	109.114 # 0.0513,	116.700 # 0.0828,	27.971 # 0.0781 (	0.0939,	0.0259,	132.68,	0.0974,	0.1248)	12
1769	96.991 # 0.0637,	117.390 # 0.0639,	21.910 # 0.0420 (	0.0856,	0.0285,	149.90,	0.0902,	0.0995)	14
1770	105.803 # 0.0632,	116.340 # 0.0719,	21.821 # 0.0557 (	0.0828,	0.0482,	58.38,	0.0958,	0.1108)	10
1771	108.531 # 0.1741,	116.611 # 0.2612,	13.486 # 0.0325 (	0.3130,	0.0236,	137.28,	0.3139,	0.3155)	4
1772	108.061 # 0.1752,	116.803 # 0.2555,	9.745 # 0.0364 (	0.3089,	0.0241,	138.13,	0.3098,	0.3119)	4
1773	113.332 # 0.1174,	118.551 # 0.3331,	27.007 # 0.2677 (	0.3522,	0.0255,	121.16,	0.3532,	0.4431)	8
1774	113.481 # 0.1194,	119.769 # 0.3681,	27.031 # 0.2785 (	0.3861,	0.0262,	119.55,	0.3870,	0.4768)	8
1775	114.097 # 0.1077,	119.554 # 0.3613,	27.967 # 0.2931 (	0.3761,	0.0263,	117.96,	0.3770,	0.4776)	8
1776	113.314 # 0.0418,	118.355 # 0.1093,	14.224 # 0.0236 (	0.1149,	0.0225,	120.28,	0.1171,	0.1194)	10
1777	113.346 # 0.1042,	119.790 # 0.3145,	14.208 # 0.0424 (	0.3305,	0.0232,	119.93,	0.3313,	0.3340)	8
1778	89.542 # 0.0691,	120.416 # 0.0513,	27.798 # 0.0516 (	0.0789,	0.0343,	36.02,	0.0860,	0.1003)	12
1779	90.103 # 0.0695,	120.804 # 0.0522,	26.813 # 0.0498 (	0.0798,	0.0344,	36.73,	0.0869,	0.1002)	12
1780	89.621 # 0.0712,	121.878 # 0.0551,	27.782 # 0.0527 (	0.0829,	0.0350,	38.29,	0.0900,	0.1043)	12
1786	90.168 # 0.0711,	121.846 # 0.0550,	26.803 # 0.0506 (	0.0829,	0.0349,	38.24,	0.0899,	0.1032)	12
1787	91.165 # 0.5887,	121.194 # 0.2478,	14.227 # 0.0613 (	0.6376,	0.0375,	25.15,	0.6387,	0.6416)	6
1788	91.001 # 0.6104,	122.341 # 0.2779,	14.249 # 0.0635 (	0.6696,	0.0379,	27.02,	0.6707,	0.6737)	6
1790	95.028 # 0.8718,	116.661 # 0.2404,	27.973 # 0.3715 (	0.9034,	0.0426,	16.89,	0.9044,	0.9777)	4
1791	94.968 # 0.7850,	116.893 # 0.2222,	14.120 # 0.0686 (	0.8148,	0.0395,	17.31,	0.8158,	0.8187)	4
1792	94.734 # 0.7722,	116.773 # 0.2176,	13.558 # 0.0589 (	0.8013,	0.0393,	17.23,	0.8023,	0.8044)	4
1793	94.961 # 0.7615,	116.969 # 0.2175,	9.711 # 0.0461 (	0.7909,	0.0393,	17.45,	0.7919,	0.7933)	4
1901	82.964 # 0.0351,	133.633 # 0.0470,	25.233 # 0.0285 (	0.0471,	0.0350,	104.65,	0.0587,	0.0652)	22
1902	82.473 # 0.0560,	133.100 # 0.0535,	18.557 # 0.0296 (	0.0704,	0.0323,	47.75,	0.0775,	0.0829)	18
1903	82.954 # 0.0669,	133.602 # 0.0664,	18.478 # 0.0454 (	0.0729,	0.0598,	48.77,	0.0943,	0.1047)	10
1904	89.147 # 0.0399,	133.027 # 0.0744,	25.232 # 0.0322 (	0.0763,	0.0361,	116.24,	0.0844,	0.0903)	22
1905	89.584 # 0.0404,	132.480 # 0.0758,	25.236 # 0.0318 (	0.0778,	0.0365,	116.25,	0.0859,	0.0916)	22
1906	81.924 # 0.0328,	127.080 # 0.0341,	25.309 # 0.0257 (	0.0369,	0.0295,	55.70,	0.0473,	0.0538)	30
1907	83.031 # 0.0351,	133.673 # 0.0475,	25.933 # 0.0290 (	0.0476,	0.0350,	105.27,	0.0591,	0.0658)	22
1908	82.509 # 0.0378,	133.206 # 0.0367,	25.933 # 0.0269 (	0.0429,	0.0307,	47.09,	0.0527,	0.0592)	26
1909	84.009 # 0.0363,	133.545 # 0.1540,	26.427 # 0.0479 (	0.1541,	0.0357,	102.86,	0.1582,	0.1653)	18
1910	84.669 # 0.0362,	133.535 # 0.0551,	28.102 # 0.0317 (	0.0555,	0.0356,	109.73,	0.0659,	0.0732)	22
1911	84.592 # 0.0394,	133.523 # 0.0769,	31.167 # 0.0408 (	0.0776,	0.0379,	109.98,	0.0864,	0.0955)	18
1912	87.540 # 0.0420,	133.140 # 0.0849,	31.244 # 0.0423 (	0.0864,	0.0387,	113.73,	0.0947,	0.1037)	18
1913	87.610 # 0.0441,	133.195 # 0.1807,	28.152 # 0.0603 (	0.1823,	0.0369,	108.66,	0.1860,	0.1955)	18
1914	88.174 # 0.0460,	133.306 # 0.1912,	26.406 # 0.0558 (	0.1932,	0.0367,	109.32,	0.1967,	0.2045)	18
1915	89.203 # 0.0398,	133.009 # 0.0734,	25.967 # 0.0327 (	0.0753,	0.0361,	116.34,	0.0835,	0.0896)	22
1916	81.541 # 0.0315,	128.520 # 0.0358,	32.240 # 0.0280 (	0.0365,	0.0306,	76.08,	0.0477,	0.0553)	34
1917	82.118 # 0.0344,	132.049 # 0.0410,	32.361 # 0.0298 (	0.0421,	0.0329,	75.74,	0.0535,	0.0612)	22

1918	84.418 # 0.0375,	134.072 # 0.0738,	32.248 # 0.0411 (	0.0742,	0.0366,	107.82,	0.0828,	0.0924)	20
1919	87.771 # 0.0423,	133.609 # 0.0853,	32.328 # 0.0438 (	0.0870,	0.0387,	114.16,	0.0952,	0.1048)	20
1920	89.995 # 0.0430,	131.054 # 0.0721,	32.243 # 0.0390 (	0.0741,	0.0393,	117.89,	0.0839,	0.0925)	20
1921	84.450 # 0.0377,	133.879 # 0.0640,	34.277 # 0.0403 (	0.0645,	0.0368,	109.81,	0.0743,	0.0845)	22
1922	82.184 # 0.0337,	131.849 # 0.0385,	34.396 # 0.0299 (	0.0393,	0.0328,	76.21,	0.0512,	0.0593)	26
1923	87.729 # 0.0396,	133.375 # 0.0672,	34.349 # 0.0411 (	0.0685,	0.0374,	114.44,	0.0780,	0.0882)	24
1924	84.577 # 0.0420,	133.513 # 0.0726,	40.978 # 0.0519 (	0.0738,	0.0399,	113.60,	0.0839,	0.0986)	20
1925	82.345 # 0.0581,	131.746 # 0.0534,	40.861 # 0.0600 (	0.0674,	0.0410,	44.15,	0.0789,	0.0991)	14
1926	82.079 # 0.0536,	128.617 # 0.0544,	40.904 # 0.0627 (	0.0660,	0.0384,	51.02,	0.0764,	0.0988)	18
1927	87.653 # 0.0445,	133.145 # 0.0922,	41.007 # 0.0584 (	0.0937,	0.0411,	112.87,	0.1023,	0.1178)	20
1928	89.374 # 0.0428,	130.875 # 0.0804,	41.104 # 0.0526 (	0.0819,	0.0400,	113.60,	0.0911,	0.1052)	24
1929	90.158 # 0.0461,	131.042 # 0.0891,	42.170 # 0.0573 (	0.0911,	0.0421,	115.09,	0.1003,	0.1155)	24
1930	88.255 # 0.0456,	133.882 # 0.0946,	42.355 # 0.0664 (	0.0965,	0.0414,	113.98,	0.1050,	0.1243)	21
1931	84.200 # 0.0427,	134.096 # 0.0936,	42.564 # 0.0665 (	0.0946,	0.0405,	109.95,	0.1029,	0.1225)	21
1932	81.764 # 0.0443,	132.023 # 0.0469,	42.065 # 0.0458 (	0.0509,	0.0395,	57.38,	0.0645,	0.0791)	22
1933	82.528 # 0.0322,	133.189 # 0.0350,	25.281 # 0.0237 (	0.0372,	0.0296,	61.70,	0.0475,	0.0531)	30
1934	81.885 # 0.0420,	127.011 # 0.0404,	18.579 # 0.0265 (	0.0490,	0.0316,	46.92,	0.0583,	0.0640)	22
1935	82.690 # 0.0376,	131.921 # 0.0420,	31.166 # 0.0317 (	0.0447,	0.0343,	64.15,	0.0564,	0.0647)	18
1936	82.037 # 0.0323,	128.743 # 0.0385,	31.162 # 0.0285 (	0.0395,	0.0310,	76.36,	0.0502,	0.0577)	28
1937	82.448 # 0.0635,	131.680 # 0.0440,	28.052 # 0.0424 (	0.0693,	0.0341,	30.51,	0.0773,	0.0881)	14
1938	82.613 # 0.0634,	132.224 # 0.0441,	26.538 # 0.0398 (	0.0694,	0.0338,	30.87,	0.0772,	0.0869)	14
1940	83.176 # 0.0412,	128.955 # 0.0524,	47.786 # 0.0461 (	0.0524,	0.0412,	103.09,	0.0667,	0.0810)	20
1941	83.533 # 0.0410,	131.114 # 0.0551,	47.776 # 0.0475 (	0.0552,	0.0408,	106.22,	0.0686,	0.0835)	20
1942	84.948 # 0.0462,	132.330 # 0.1071,	47.737 # 0.0792 (	0.1084,	0.0429,	110.93,	0.1166,	0.1410)	22
1943	86.987 # 0.0462,	132.018 # 0.1032,	47.811 # 0.0747 (	0.1045,	0.0434,	110.74,	0.1131,	0.1356)	22
1944	88.244 # 0.0475,	130.468 # 0.1033,	47.973 # 0.0741 (	0.1048,	0.0442,	111.71,	0.1137,	0.1357)	22
1945	83.919 # 0.0473,	129.247 # 0.0911,	51.704 # 0.0719 (	0.0919,	0.0457,	109.86,	0.1026,	0.1253)	18
1946	84.191 # 0.0488,	130.624 # 0.1217,	51.715 # 0.0955 (	0.1231,	0.0453,	110.26,	0.1311,	0.1622)	18
1947	85.196 # 0.0490,	131.479 # 0.1195,	51.619 # 0.0942 (	0.1211,	0.0449,	111.15,	0.1292,	0.1599)	22
1948	86.531 # 0.0479,	131.266 # 0.1133,	51.707 # 0.0875 (	0.1144,	0.0451,	109.75,	0.1230,	0.1510)	22
1949	87.481 # 0.0488,	130.099 # 0.1131,	51.726 # 0.0864 (	0.1144,	0.0456,	110.51,	0.1232,	0.1505)	22
1950	89.707 # 0.0411,	130.948 # 0.0696,	34.329 # 0.0405 (	0.0711,	0.0384,	115.82,	0.0808,	0.0904)	22
1951	81.829 # 0.0345,	128.463 # 0.0374,	34.398 # 0.0319 (	0.0392,	0.0325,	64.26,	0.0509,	0.0601)	28
1952	82.316 # 0.0359,	126.582 # 0.0352,	25.309 # 0.0281 (	0.0402,	0.0302,	47.67,	0.0502,	0.0576)	22
1953	81.890 # 0.0369,	127.144 # 0.0356,	26.025 # 0.0291 (	0.0414,	0.0303,	46.47,	0.0513,	0.0590)	20
1954	82.393 # 0.0361,	126.447 # 0.0354,	26.042 # 0.0289 (	0.0405,	0.0303,	47.76,	0.0506,	0.0582)	22
1955	83.312 # 0.0417,	126.434 # 0.0530,	26.542 # 0.0376 (	0.0591,	0.0326,	64.53,	0.0675,	0.0773)	14
1956	82.234 # 0.0666,	128.067 # 0.0418,	26.522 # 0.0415 (	0.0710,	0.0338,	25.76,	0.0786,	0.0889)	8
1957	82.288 # 0.0435,	126.571 # 0.0398,	18.626 # 0.0271 (	0.0496,	0.0319,	43.20,	0.0589,	0.0649)	18
1959	86.476 # 0.0658,	127.216 # 0.0710,	47.791 # 0.0890 (	0.0780,	0.0573,	58.18,	0.0968,	0.1315)	10
1960	82.148 # 0.0476,	128.607 # 0.0397,	28.176 # 0.0360 (	0.0523,	0.0332,	36.24,	0.0619,	0.0716)	12
1961	83.858 # 0.0397,	126.400 # 0.0507,	28.229 # 0.0383 (	0.0554,	0.0327,	66.57,	0.0644,	0.0749)	18
1963	86.912 # 0.0762,	126.046 # 0.0714,	40.918 # 0.0924 (	0.0797,	0.0674,	-37.19,	0.1044,	0.1394)	10
1964	86.985 # 0.0416,	125.550 # 0.0442,	32.286 # 0.0398 (	0.0498,	0.0346,	55.61,	0.0606,	0.0725)	20
1965	86.866 # 0.0465,	125.980 # 0.0689,	31.218 # 0.0572 (	0.0691,	0.0462,	105.86,	0.0831,	0.1009)	16
1966	86.846 # 0.0403,	126.009 # 0.0597,	28.179 # 0.0436 (	0.0597,	0.0403,	99.54,	0.0720,	0.0841)	20
1967	87.012 # 0.0797,	125.333 # 0.0895,	42.099 # 0.1133 (	0.0925,	0.0763,	129.20,	0.1198,	0.1650)	8
1969	86.169 # 0.1033,	127.960 # 0.1218,	51.739 # 0.1816 (	0.1306,	0.0919,	133.87,	0.1597,	0.2418)	8
1970	89.157 # 0.0803,	127.757 # 0.0940,	40.853 # 0.1079 (	0.0968,	0.0768,	125.85,	0.1236,	0.1641)	8
1971	89.691 # 0.0815,	127.489 # 0.0974,	42.102 # 0.1157 (	0.0997,	0.0787,	122.67,	0.1270,	0.1718)	8
1972	88.044 # 0.0934,	128.396 # 0.1106,	47.773 # 0.1502 (	0.1166,	0.0857,	131.01,	0.1447,	0.2085)	8
1973	87.335 # 0.1032,	128.812 # 0.1233,	51.678 # 0.1815 (	0.1315,	0.0924,	132.57,	0.1608,	0.2424)	8
1974	84.809 # 0.0956,	128.080 # 0.1080,	51.663 # 0.1575 (	0.1090,	0.0944,	82.17,	0.1442,	0.2135)	8
1977	82.244 # 0.1012,	126.286 # 0.0794,	9.585 # 0.0305 (	0.1239,	0.0343,	41.05,	0.1286,	0.1321)	8
1984	83.914 # 0.0429,	126.391 # 0.0448,	31.077 # 0.0403 (	0.0516,	0.0343,	53.65,	0.0620,	0.0740)	18
1985	83.660 # 0.0468,	126.049 # 0.0457,	32.350 # 0.0439 (	0.0549,	0.0356,	48.23,	0.0654,	0.0788)	16
1986	83.741 # 0.0434,	126.235 # 0.0425,	34.485 # 0.0427 (	0.0499,	0.0346,	48.18,	0.0608,	0.0742)	20
1987	83.754 # 0.0645,	126.280 # 0.0561,	40.994 # 0.0722 (	0.0754,	0.0404,	42.00,	0.0855,	0.1119)	12
1988	83.414 # 0.0666,	125.833 # 0.0648,	42.173 # 0.0821 (	0.0776,	0.0510,	47.80,	0.0929,	0.1240)	10
1989	84.427 # 0.0766,	127.378 # 0.0750,	47.818 # 0.1054 (	0.0915,	0.0558,	48.57,	0.1072,	0.1503)	10
1991	81.464 # 0.0763,	128.340 # 0.0736,	42.165 # 0.0948 (	0.0922,	0.0522,	47.77,	0.1060,	0.1422)	6
1992	85.716 # 0.0858,	129.690 # 0.0936,	55.418 # 0.1323 (	0.0941,	0.0853,	114.67,	0.1270,	0.1834)	8
1996	87.509 # 0.0469,	126.113 # 0.0809,	26.605 # 0.0495 (	0.0824,	0.0441,	85.25,	0.0935,	0.1058)	10
2003	89.637 # 0.0888,	132.433 # 0.1276,	18.524 # 0.0581 (	0.1293,	0.0864,	113.82,	0.1555,	0.1660)	4

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    2004     89.158 # 0.0859,    132.934 # 0.1207,     18.543 # 0.0595 (  0.1225,  0.0834, 114.73,  0.1482,  0.1596)  4
    2005     89.604 # 0.0561,    132.438 # 0.0756,     26.002 # 0.0440 (  0.0769,  0.0544, 116.31,  0.0941,  0.1039)  8
    2006     89.481 # 0.0620,    130.885 # 0.0727,     28.119 # 0.0487 (  0.0731,  0.0615, 113.34,  0.0955,  0.1072)  8
    2008     89.332 # 0.0567,    127.780 # 0.0660,     34.430 # 0.0582 (  0.0660,  0.0567, 100.18,  0.0870,  0.1047) 10
    2009     89.557 # 0.0595,    127.708 # 0.0800,     32.296 # 0.0656 (  0.0809,  0.0584,  86.82,  0.0998,  0.1194)  8
    2010     89.055 # 0.0587,    127.903 # 0.0780,     31.376 # 0.0624 (  0.0787,  0.0578,  87.57,  0.0976,  0.1158)  8
    2012     88.382 # 0.0593,    125.940 # 0.0622,     26.070 # 0.0445 (  0.0673,  0.0534,  56.60,  0.0859,  0.0968)  8
    2013     88.962 # 0.0620,    126.386 # 0.0655,     26.073 # 0.0455 (  0.0713,  0.0553,  57.12,  0.0902,  0.1010)  8
    2014     88.974 # 0.0629,    126.421 # 0.0659,     25.271 # 0.0444 (  0.0724,  0.0554,  55.73,  0.0911,  0.1014)  8
    2015     88.401 # 0.0547,    125.946 # 0.0462,     25.294 # 0.0332 (  0.0629,  0.0342,  40.04,  0.0716,  0.0790) 14
    2016     89.456 # 0.0797,    131.536 # 0.0748,     26.541 # 0.0520 (  0.0836,  0.0704, -38.01,  0.1093,  0.1210)  6
    2017     89.490 # 0.0796,    130.892 # 0.0863,     31.250 # 0.0711 (  0.0874,  0.0785, 122.95,  0.1174,  0.1372)  4
    2018     90.529 # 6.2034,    127.852 # 0.4332,     27.603 # 2.6316 (  6.2179,  0.0834,  -4.36,  6.2185,  6.7524)  4
    2019     88.881 # 0.0642,    127.359 # 0.0657,     26.617 # 0.0459 (  0.0701,  0.0594,  54.57,  0.0918,  0.1027)  8
    2020     88.921 # 0.1008,    126.346 # 0.0951,     18.650 # 0.0568 (  0.1142,  0.0784,  44.82,  0.1385,  0.1497)  4
    2021     88.380 # 0.0701,    125.892 # 0.0568,     18.650 # 0.0327 (  0.0832,  0.0349,  40.45,  0.0902,  0.0960) 12
    2022     91.171 # 0.0918,    126.126 # 0.0532,     21.142 # 0.0264 (  0.1050,  0.0150,  32.65,  0.1061,  0.1093)  5
    2023     90.124 # 0.1142,    125.463 # 0.0653,      9.633 # 0.0143 (  0.1302,  0.0182,  32.31,  0.1315,  0.1323)  6
    2024     87.564 # 0.5569,    125.302 # 0.3322,      9.616 # 0.0432 (  0.6474,  0.0366,  34.13,  0.6485,  0.6499)  6
    2026     81.867 # 0.1520,    126.862 # 0.1238,      9.517 # 0.0315 (  0.1930,  0.0342,  43.09,  0.1960,  0.1985) 10
    2027     90.806 # 0.0904,    125.953 # 0.0527,     24.203 # 0.0340 (  0.1035,  0.0150,  32.83,  0.1046,  0.1100)  6
    2028     90.682 # 0.5658,    122.217 # 0.2579,     24.311 # 0.2177 (  0.6205,  0.0397,  27.00,  0.6218,  0.6588)  6
    2029     88.371 # 0.1021,    125.910 # 0.0791,     20.727 # 0.0446 (  0.1237,  0.0371,  40.32,  0.1291,  0.1366)  8
    2030     90.897 # 0.5910,    122.451 # 0.2717,      9.548 # 0.0440 (  0.6494,  0.0374,  27.25,  0.6504,  0.6519)  6
    5000    117.784 # 0.0348,    166.472 # 0.0254,     18.359 # 0.0165 (  0.0373,  0.0215, -29.16,  0.0430,  0.0461) 22
61010101     82.109 # 0.3084,    129.964 # 0.2780,     15.391 # 0.0676 (  0.4144,  0.0254,  46.68,  0.4152,  0.4206)  8
61030101     82.909 # 0.0411,    133.249 # 0.0208,     28.414 # 0.0248 (  0.0417,  0.0195,  12.91,  0.0460,  0.0523) 12
62000001    119.061 # 0.0280,    117.544 # 0.1001,      9.788 # 0.0476 (  0.1008,  0.0253, 107.80,  0.1039,  0.1143)  4
62000002    116.099 # 0.0530,    117.311 # 0.0623,      9.788 # 0.0316 (  0.0782,  0.0240, 143.81,  0.0818,  0.0877)  4
62000003    121.136 # 0.0411,    160.181 # 0.0608,      8.887 # 0.0244 (  0.0649,  0.0343,  72.97,  0.0734,  0.0773)  4
62000004    122.164 # 0.0341,    160.434 # 0.0609,     12.241 # 0.0264 (  0.0613,  0.0333,  90.74,  0.0698,  0.0746)  6
62000005    121.416 # 0.0432,    152.779 # 0.2329,     12.061 # 0.0340 (  0.2351,  0.0293,  91.31,  0.2369,  0.2393)  6
62000006    110.393 #10.8654,     83.297 #63.5626,     24.137 # 8.2583 ( 64.4845,  0.1251,  89.22, 64.4846, 65.0113)  4
62000007     -0.173 #36.5217,    257.853 #28.0565,     30.210 # 2.9406 ( 46.0520,  0.4614, -41.70, 46.0543, 46.1481)  4
62000008    121.979 # 0.0312,    145.796 # 0.0448,     20.162 # 0.0257 (  0.0448,  0.0312, 103.96,  0.0546,  0.0603)  8
62010101    113.873 # 0.0296,    120.182 # 0.0445,     13.668 # 0.0159 (  0.0494,  0.0203, 131.70,  0.0534,  0.0557) 10
62010102    113.335 # 0.0299,    122.098 # 0.0558,     16.306 # 0.0220 (  0.0607,  0.0180, 127.08,  0.0633,  0.0671) 12
62010103    113.534 # 0.0325,    124.160 # 0.0566,      9.617 # 0.0196 (  0.0616,  0.0218, 127.59,  0.0653,  0.0682)  8
62010401    117.615 # 0.0462,    160.678 # 0.0330,      8.904 # 0.0142 (  0.0489,  0.0289,  26.58,  0.0568,  0.0585) 14
62010402    117.206 # 0.0512,    161.607 # 0.0295,     11.034 # 0.0114 (  0.0528,  0.0267,  17.85,  0.0591,  0.0602) 12
62010403    117.562 # 0.1535,    165.530 # 0.0358,     16.112 # 0.0873 (  0.1560,  0.0227, -11.51,  0.1577,  0.1802)  6
62010404    117.104 # 0.0490,    160.454 # 0.0308,     12.772 # 0.0163 (  0.0512,  0.0270,  22.09,  0.0578,  0.0601) 10
62010405    117.008 # 0.2017,    160.609 # 0.0664,     16.482 # 0.1195 (  0.2107,  0.0265,  18.81,  0.2123,  0.2436)  6
62010406    117.530 # 0.1048,    165.423 # 0.0255,     13.109 # 0.0297 (  0.1056,  0.0220,  -7.98,  0.1079,  0.1119)  8
62010407    117.340 # 0.0996,    163.341 # 0.0247,     14.633 # 0.0414 (  0.0998,  0.0238,   4.46,  0.1026,  0.1107)  8
62020101    113.296 # 0.0204,    121.535 # 0.0358,     22.671 # 0.0183 (  0.0361,  0.0199, 110.29,  0.0412,  0.0451) 14
62020102    114.250 # 0.0223,    131.554 # 0.0357,     22.607 # 0.0191 (  0.0358,  0.0222, 105.15,  0.0421,  0.0462) 18
62020103    113.562 # 0.1338,    120.514 # 0.4534,     23.726 # 0.1462 (  0.4720,  0.0261,  82.04,  0.4728,  0.4948)  8
62020201    114.657 # 0.0243,    135.301 # 0.0436,     19.239 # 0.0174 (  0.0436,  0.0243,  98.31,  0.0499,  0.0528) 14
62020301    116.725 # 0.0344,    155.902 # 0.0319,     25.925 # 0.0195 (  0.0372,  0.0285, -40.73,  0.0469,  0.0508) 16
62020302    116.684 # 0.0386,    155.891 # 0.0326,     20.028 # 0.0169 (  0.0390,  0.0321, -16.14,  0.0505,  0.0533) 12
62020303    116.167 # 0.0324,    150.447 # 0.0343,     21.368 # 0.0170 (  0.0343,  0.0324,  98.01,  0.0471,  0.0501) 11
62020304    116.003 # 0.0309,    148.629 # 0.0331,     24.906 # 0.0184 (  0.0331,  0.0309,  99.35,  0.0453,  0.0489) 12
62020305    116.131 # 0.0318,    150.439 # 0.0325,     24.936 # 0.0181 (  0.0328,  0.0316, 128.11,  0.0455,  0.0490) 12
62020306    117.253 # 0.0391,    154.532 # 0.0359,     19.963 # 0.0186 (  0.0395,  0.0355,  21.16,  0.0531,  0.0563)  6
62020307    116.677 # 0.0357,    155.916 # 0.0317,     24.814 # 0.0192 (  0.0369,  0.0303, -29.50,  0.0477,  0.0515) 12
62020402    112.312 # 0.0519,    161.064 # 0.0290,     22.328 # 0.0186 (  0.0543,  0.0243, -21.22,  0.0595,  0.0623)  8
62020403    112.395 # 0.0585,    163.586 # 0.0330,     20.746 # 0.0184 (  0.0628,  0.0238, -25.73,  0.0671,  0.0696)  8
62020404    112.518 # 0.0378,    163.593 # 0.0250,     25.940 # 0.0185 (  0.0398,  0.0217, -24.43,  0.0453,  0.0490) 24
62030101    113.876 # 0.0227,    117.940 # 0.0339,     28.002 # 0.0254 (  0.0354,  0.0204, 122.78,  0.0408,  0.0481) 18
62030301    111.287 # 0.0524,    152.478 # 0.0296,     32.532 # 0.0370 (  0.0524,  0.0296,  -1.32,  0.0602,  0.0707)  8
62030302    108.065 # 0.0594,    155.892 # 0.0274,     31.807 # 0.0371 (  0.0595,  0.0271,  -4.55,  0.0654,  0.0752) 12
62030303    109.727 # 0.0396,    153.812 # 0.0296,     30.954 # 0.0253 (  0.0402,  0.0287, -16.87,  0.0494,  0.0555) 14
62030304    109.057 # 0.0399,    154.666 # 0.0298,     30.950 # 0.0254 (  0.0407,  0.0287, -18.00,  0.0498,  0.0559) 14
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62030305     108.245 # 0.6913,    145.594 # 0.0478,     31.369 # 0.3983 (  0.6918,  0.0399,   2.43,  0.6930,  0.7993)  4
63000001     136.143 # 3.7264,    142.065 # 7.7939,     22.858 # 0.7832 (  8.6386,  0.0807, 128.39,  8.6390,  8.6744)  4
63000002     103.775 # 0.0448,    170.153 # 0.0304,     14.666 # 0.0211 (  0.0455,  0.0293, -15.13,  0.0541,  0.0581)  8
63000003      98.216 # 0.0724,    169.235 # 0.0447,      8.031 # 0.0451 (  0.0785,  0.0329, -27.83,  0.0851,  0.0963)  4
63000004      98.844 # 0.0861,    170.556 # 0.0359,      8.003 # 0.0471 (  0.0867,  0.0345,  -8.18,  0.0933,  0.1045)  4
63000005     105.750 # 0.2217,    172.913 # 0.0451,     13.948 # 0.0883 (  0.2239,  0.0324,   9.03,  0.2263,  0.2429)  4
63000006     105.104 # 0.2647,    171.789 # 0.0402,      7.957 # 0.0525 (  0.2651,  0.0372,   3.69,  0.2677,  0.2728)  4
63010101     112.059 # 0.1085,    167.069 # 0.0459,     14.055 # 0.0498 (  0.1154,  0.0237, -22.66,  0.1178,  0.1279)  4
63010201     106.912 # 0.0420,    167.673 # 0.0337,     16.629 # 0.0207 (  0.0448,  0.0298, -30.85,  0.0538,  0.0577) 10
63010202     105.997 # 0.0433,    167.758 # 0.0340,     16.555 # 0.0219 (  0.0460,  0.0302, -29.93,  0.0550,  0.0592)  8
63010203     102.765 # 0.0398,    168.088 # 0.0340,     16.054 # 0.0201 (  0.0422,  0.0310, -32.44,  0.0523,  0.0561) 12
63010204     107.059 # 0.0607,    167.607 # 0.0354,     14.914 # 0.0371 (  0.0666,  0.0225, -28.73,  0.0703,  0.0795)  4
63010205     112.571 # 0.1906,    167.240 # 0.0820,      9.454 # 0.0304 (  0.2048,  0.0334, -24.19,  0.2075,  0.2097)  4
63010206     112.006 # 0.1415,    167.041 # 0.0622,     11.406 # 0.0318 (  0.1522,  0.0266, -24.49,  0.1546,  0.1578)  4
63010301      99.904 # 0.0388,    168.377 # 0.0344,     14.584 # 0.0209 (  0.0406,  0.0323, -31.95,  0.0519,  0.0559) 12
63010302      99.198 # 0.0388,    168.469 # 0.0327,     13.024 # 0.0191 (  0.0402,  0.0310, -26.51,  0.0508,  0.0542) 12
63010401      93.676 # 0.0409,    168.776 # 0.0284,     10.352 # 0.0149 (  0.0435,  0.0243, -26.65,  0.0498,  0.0520) 12
63010402      93.697 # 0.0373,    168.801 # 0.0253,     16.179 # 0.0146 (  0.0385,  0.0234, -20.19,  0.0451,  0.0474) 16
63010501      88.929 # 0.0377,    169.225 # 0.0279,     10.382 # 0.0134 (  0.0395,  0.0252, -25.48,  0.0469,  0.0488) 14
63020101     114.380 # 0.0753,    166.895 # 0.0316,     16.920 # 0.0409 (  0.0784,  0.0229, -18.81,  0.0816,  0.0913)  8
63020102     115.086 # 0.0742,    166.830 # 0.0313,     16.907 # 0.0404 (  0.0772,  0.0229, -18.75,  0.0805,  0.0901)  8
63020201      99.736 # 0.0394,    164.855 # 0.0333,     20.483 # 0.0180 (  0.0437,  0.0275, -37.45,  0.0516,  0.0547) 14
63030201     105.938 # 0.0376,    156.276 # 0.0295,     30.989 # 0.0232 (  0.0392,  0.0274, -25.55,  0.0478,  0.0532) 18
63030202     102.753 # 0.0347,    157.010 # 0.0250,     32.821 # 0.0205 (  0.0361,  0.0229, -23.31,  0.0427,  0.0474) 38
64000001      82.951 # 0.0376,    165.577 # 0.0521,     12.697 # 0.0137 (  0.0558,  0.0317, 128.96,  0.0642,  0.0657) 10
64000002      81.325 # 0.0418,    146.927 # 0.0236,     14.232 # 0.0218 (  0.0419,  0.0234,  -5.62,  0.0480,  0.0527)  6
64000004      71.578 # 0.0740,     99.446 # 0.7861,     23.783 # 0.1132 (  0.7877,  0.0546,  95.95,  0.7896,  0.7977) 10
64000005      79.246 # 0.0663,     91.065 # 0.9767,     18.374 # 0.0804 (  0.9770,  0.0613, 101.66,  0.9790,  0.9822) 10
64000006      77.424 # 0.4067,    147.746 # 0.1199,      8.985 # 0.0556 (  0.4232,  0.0257, -17.88,  0.4240,  0.4276)  4
64000007      65.245 # 0.0478,    118.947 # 0.0996,     13.761 # 0.0477 (  0.1061,  0.0308,  76.58,  0.1105,  0.1203)  6
64000008      76.295 # 0.1570,    116.172 # 0.0622,     10.473 # 0.0239 (  0.1668,  0.0268,  22.14,  0.1689,  0.1706)  6
64010101      86.169 # 0.0508,    167.924 # 0.0587,     10.375 # 0.0144 (  0.0715,  0.0302, 143.41,  0.0776,  0.0789)  8
64010201      84.958 # 0.0324,    156.002 # 0.0248,     11.989 # 0.0152 (  0.0325,  0.0248,  -3.27,  0.0409,  0.0436) 12
64020101     119.864 # 0.1024,    124.893 # 0.0670,     39.028 # 0.0701 (  0.1060,  0.0612, -20.43,  0.1224,  0.1411)  7
64020201      86.148 # 0.1407,    167.910 # 0.2041,     16.198 # 0.0185 (  0.2457,  0.0325, 137.99,  0.2479,  0.2485)  4
64030401      87.291 # 0.0435,    145.606 # 0.0200,     22.099 # 0.0193 (  0.0435,  0.0200,  -2.59,  0.0479,  0.0516) 14
64030501      92.571 # 0.1149,    140.022 # 0.0435,     24.240 # 0.0443 (  0.1201,  0.0262, -19.17,  0.1229,  0.1306) 10
64040301      98.829 # 0.0322,    153.731 # 0.0220,     32.886 # 0.0184 (  0.0326,  0.0214, -12.98,  0.0390,  0.0431) 42
65030101      84.303 # 0.0256,    126.480 # 0.0574,     31.016 # 0.0422 (  0.0585,  0.0230, 113.21,  0.0629,  0.0757) 12
65030102      88.406 # 0.0359,    126.378 # 0.0376,     28.456 # 0.0330 (  0.0462,  0.0239,  52.50,  0.0520,  0.0616) 10
65040101      84.790 # 0.1004,    126.280 # 0.1376,     40.875 # 0.1457 (  0.1658,  0.0391, 138.94,  0.1703,  0.2241)  8
65040102      86.950 # 0.0252,    125.744 # 0.0329,     34.368 # 0.0281 (  0.0329,  0.0252, 102.21,  0.0415,  0.0501) 20
65040103      86.986 # 0.0389,    125.381 # 0.0505,     42.314 # 0.0583 (  0.0505,  0.0388,  95.68,  0.0637,  0.0863)  6
65040104      86.035 # 0.1018,    128.084 # 0.1269,     51.559 # 0.1720 (  0.1567,  0.0438, 141.86,  0.1627,  0.2367) 12
66000001     100.150 # 0.0230,    105.918 # 0.1028,     14.173 # 0.0438 (  0.1029,  0.0225,  96.89,  0.1054,  0.1141)  8
66010101      92.906 # 0.0198,    119.764 # 0.0262,     18.359 # 0.0154 (  0.0263,  0.0196, 108.97,  0.0328,  0.0363) 16
66010102      96.863 # 0.0265,    115.386 # 0.0406,     10.117 # 0.0156 (  0.0430,  0.0223, 125.41,  0.0485,  0.0509)  8
66010301     109.338 # 0.0162,    117.701 # 0.0256,     18.375 # 0.0141 (  0.0256,  0.0162,  96.58,  0.0303,  0.0335) 16
66010302     107.126 # 0.0190,    114.481 # 0.0275,     10.169 # 0.0140 (  0.0276,  0.0190,  95.01,  0.0335,  0.0363)  8
66020101      92.023 # 0.0189,    119.513 # 0.0246,     24.903 # 0.0196 (  0.0246,  0.0189, 103.31,  0.0310,  0.0367) 18
66020201     101.412 # 0.0187,    117.276 # 0.0333,     25.412 # 0.0267 (  0.0339,  0.0177, 113.24,  0.0382,  0.0466) 14
66020301     111.250 # 0.0170,    117.687 # 0.0275,     25.014 # 0.0210 (  0.0275,  0.0169,  94.89,  0.0323,  0.0386) 16
67030101      86.316 # 0.0453,    133.244 # 0.1796,     28.651 # 0.0566 (  0.1825,  0.0315, 111.60,  0.1852,  0.1937) 16
67030102      89.152 # 0.0335,    131.287 # 0.1172,     30.894 # 0.0514 (  0.1181,  0.0300, 108.40,  0.1219,  0.1323) 18
67040101      85.058 # 0.0371,    131.958 # 0.1411,     47.023 # 0.0900 (  0.1417,  0.0345, 106.31,  0.1459,  0.1714) 22
90000006      76.192 # 0.0455,    180.587 # 0.0323,      9.370 # 0.0212 (  0.0456,  0.0321,  -7.13,  0.0558,  0.0596)  0
90000007      76.272 # 0.0455,    180.711 # 0.0325,      9.385 # 0.0212 (  0.0456,  0.0323,  -7.63,  0.0559,  0.0598)  0
90000008      77.474 # 0.0444,    181.550 # 0.0336,      9.308 # 0.0200 (  0.0448,  0.0331, -12.49,  0.0557,  0.0592)  0
90000009      66.234 # 0.0437,    150.587 # 0.0380,     10.461 # 0.0258 (  0.0442,  0.0374,  17.96,  0.0579,  0.0634)  0
90000010      66.449 # 0.0513,    151.465 # 0.0394,     10.449 # 0.0265 (  0.0515,  0.0391,   9.17,  0.0647,  0.0699)  0
90000011      63.716 # 0.0394,    114.066 # 0.0399,     11.008 # 0.0390 (  0.0450,  0.0333,  51.51,  0.0560,  0.0683)  0
90000012      63.991 # 0.0420,    112.685 # 0.0388,     11.056 # 0.0331 (  0.0439,  0.0367,  35.48,  0.0572,  0.0661)  0
90000017      99.076 # 0.0344,     98.804 # 0.0383,     11.537 # 0.0304 (  0.0390,  0.0336,  75.44,  0.0515,  0.0598)  0
90000018     100.693 # 0.0345,     98.846 # 0.0388,     11.571 # 0.0305 (  0.0397,  0.0335,  74.40,  0.0519,  0.0602)  0
```

```
     90000019     100.631 # 0.0337,      98.931 # 0.0339,      11.520 # 0.0307 (  0.0360,  0.0315,  51.55,  0.0478,  0.0568)  0
     90000020      99.092 # 0.0336,      98.907 # 0.0335,      11.493 # 0.0313 (  0.0343,  0.0327,  48.40,  0.0474,  0.0568)  0
     90000022     120.277 # 0.0588,      98.711 # 0.0551,      11.797 # 0.0545 (  0.0603,  0.0534,  32.20,  0.0806,  0.0973)  0
     90000024     121.746 # 0.0610,      98.663 # 0.0581,      11.812 # 0.0567 (  0.0633,  0.0556,  38.08,  0.0843,  0.1016)  0
     90000025     119.692 # 0.0296,     114.200 # 0.0403,      11.488 # 0.0222 (  0.0429,  0.0257, 128.21,  0.0500,  0.0547)  0
     90000026     119.087 # 0.0288,     113.359 # 0.0410,      11.481 # 0.0213 (  0.0437,  0.0246, 127.24,  0.0502,  0.0545)  0
     90000027     123.611 # 0.0373,     164.207 # 0.0275,      10.345 # 0.0193 (  0.0383,  0.0260, -20.00,  0.0463,  0.0502)  0
     90000028     122.854 # 0.0367,     165.340 # 0.0290,      10.333 # 0.0169 (  0.0375,  0.0279, -20.54,  0.0468,  0.0497)  0
     90000031     120.561 # 0.1098,     143.124 # 0.1090,      16.405 # 0.0631 (  0.1459,  0.0518,  49.70,  0.1548,  0.1671)  0
     90000032     120.515 # 0.1069,     142.153 # 0.0965,      16.451 # 0.0604 (  0.1346,  0.0513,  45.63,  0.1440,  0.1562)  0
     90000033     127.635 # 0.0375,     158.846 # 0.0596,      19.996 # 0.0307 (  0.0606,  0.0359, 114.39,  0.0704,  0.0768)  0
     90000034     127.825 # 0.0394,     160.426 # 0.0603,      19.979 # 0.0304 (  0.0633,  0.0344, 123.55,  0.0720,  0.0782)  0
     90000035     128.621 # 0.0573,     146.966 # 0.0616,      19.754 # 0.0364 (  0.0678,  0.0499,  57.94,  0.0841,  0.0917)  0
     90000036     128.386 # 0.0627,     145.701 # 0.0582,      19.721 # 0.0364 (  0.0675,  0.0525,  40.11,  0.0855,  0.0930)  0
     90000037     124.476 # 0.0439,     159.524 # 0.0395,      19.991 # 0.0370 (  0.0448,  0.0384, -26.51,  0.0591,  0.0697)  0
     90000038     123.190 # 0.0419,     159.796 # 0.0393,      20.012 # 0.0333 (  0.0431,  0.0379, -33.14,  0.0574,  0.0664)  0
     90000054      94.199 # 0.0521,     170.827 # 0.0410,       9.594 # 0.0341 (  0.0539,  0.0387, -23.63,  0.0663,  0.0746)  0
     90000055      94.442 # 0.0512,     171.995 # 0.0463,       9.541 # 0.0359 (  0.0561,  0.0403, -39.86,  0.0690,  0.0778)  0
     90000056     105.195 # 0.1011,     205.406 # 0.0702,      16.472 # 0.0686 (  0.1014,  0.0698,   6.48,  0.1231,  0.1409)  0
     90000057     106.511 # 0.0994,     205.183 # 0.0698,      16.588 # 0.0646 (  0.0996,  0.0695,   6.04,  0.1214,  0.1375)  0
     90000058      96.181 # 0.0756,     197.761 # 0.0557,      16.417 # 0.0443 (  0.0772,  0.0535,  18.06,  0.0939,  0.1038)  0
     90000059      99.202 # 0.0769,     197.599 # 0.0572,      16.433 # 0.0467 (  0.0774,  0.0566,  10.40,  0.0958,  0.1066)  0
     90000060      75.366 # 0.0594,     179.264 # 0.0400,      20.256 # 0.0414 (  0.0596,  0.0398,   6.32,  0.0717,  0.0828)  0
     90000061      76.719 # 0.0504,     184.409 # 0.0401,      20.240 # 0.0281 (  0.0514,  0.0388, -19.93,  0.0644,  0.0703)  0
     90000062      76.598 # 0.0443,     180.470 # 0.0333,      16.302 # 0.0184 (  0.0447,  0.0327, -12.75,  0.0554,  0.0584)  0
     90000063      77.142 # 0.0469,     183.720 # 0.0394,      16.552 # 0.0206 (  0.0487,  0.0371, -27.51,  0.0612,  0.0646)  0
     90000066     120.690 # 0.0374,     100.482 # 0.0380,      11.787 # 0.0318 (  0.0385,  0.0369,  61.70,  0.0533,  0.0621)  0
     90000067     118.827 # 0.0384,      98.797 # 0.0387,      11.839 # 0.0341 (  0.0395,  0.0376,  55.66,  0.0545,  0.0643)  0
     90000068      56.416 # 0.0492,     104.452 # 0.0556,      11.291 # 0.0502 (  0.0556,  0.0491,  93.01,  0.0742,  0.0896)  0
     90000069      54.675 # 0.0502,     107.745 # 0.0570,      11.253 # 0.0529 (  0.0574,  0.0498,  85.00,  0.0760,  0.0926)  0
     90001001      63.237 # 0.1568,     144.464 # 0.0709,      18.176 # 0.0624 (  0.1599,  0.0635,  13.77,  0.1720,  0.1830)  0
     90001002      60.124 # 0.2586,     147.399 # 0.1983,      18.182 # 0.1744 (  0.2591,  0.1976,  -6.49,  0.3259,  0.3696)  0
     90001003      60.462 # 0.1694,     147.100 # 0.0611,      18.010 # 0.0701 (  0.1697,  0.0602,   4.15,  0.1801,  0.1932)  0
     90001004      58.999 # 0.3780,     133.504 # 0.3082,      17.831 # 0.1734 (  0.3820,  0.3032, -15.28,  0.4877,  0.5176)  0
     90001005      58.906 # 0.1706,     133.644 # 0.2722,      18.253 # 0.1700 (  0.2789,  0.1594,  82.89,  0.3212,  0.3634)  0
     90001006      59.005 # 0.1518,     133.550 # 0.3348,      18.402 # 0.1600 (  0.3385,  0.1432,  89.54,  0.3676,  0.4009)  0
     90001014      58.361 # 0.1497,     152.000 # 0.0552,      10.034 # 0.0825 (  0.1497,  0.0551,   1.23,  0.1595,  0.1796)  0
     90001059      82.578 # 0.1792,      98.350 # 0.1492,      10.839 # 0.1469 (  0.1874,  0.1388,  28.54,  0.2332,  0.2756)  0
     90001060      82.998 # 0.1635,      98.418 # 0.1486,      11.139 # 0.1282 (  0.1771,  0.1321,  39.13,  0.2209,  0.2554)  0
     90002004      89.333 # 0.2964,     157.001 # 0.3400,      17.933 # 0.1777 (  0.3447,  0.2909,  80.08,  0.4511,  0.4848)  0
     90002005      89.276 # 0.2828,     156.492 # 0.2304,      17.968 # 0.2129 (  0.2842,  0.2286, -10.84,  0.3647,  0.4223)  0
     90002006      89.416 # 0.5078,     156.714 # 0.2364,      18.224 # 0.6398 (  0.5090,  0.2338,  -4.91,  0.5601,  0.8503)  0
     90003004      82.220 # 0.2924,     103.366 # 0.3441,      17.878 # 0.1675 (  0.3629,  0.2688,  68.70,  0.4516,  0.4817)  0
     90003005      81.867 # 0.2873,     103.222 # 0.2380,      18.244 # 0.2173 (  0.2975,  0.2250, -26.08,  0.3730,  0.4317)  0
     90003006      81.697 # 0.5377,     103.164 # 0.2825,      18.170 # 0.5685 (  0.5496,  0.2587, -15.05,  0.6074,  0.8320)  0
     90004004     112.398 # 0.3251,     126.083 # 0.3675,      17.886 # 0.1782 (  0.3764,  0.3148,  74.25,  0.4907,  0.5220)  0
     90004005     112.641 # 0.3034,     126.376 # 0.3950,      18.387 # 0.2550 (  0.4130,  0.2783,  74.08,  0.4980,  0.5595)  0
     90004006     112.432 # 0.4024,     126.207 # 0.7613,      18.086 # 0.7698 (  0.8032,  0.3104,  77.53,  0.8611,  1.1550)  0
     90005001     102.010 # 0.0560,     170.776 # 0.0479,       9.599 # 0.0268 (  0.0686,  0.0269, -43.18,  0.0737,  0.0784)  0
     90005002     108.734 # 0.0982,     169.398 # 0.0427,       9.777 # 0.0459 (  0.0990,  0.0408,  -8.92,  0.1070,  0.1164)  0
     90005003     122.842 # 0.0365,     165.438 # 0.0291,      10.480 # 0.0158 (  0.0373,  0.0280, -20.60,  0.0467,  0.0493)  0
     90005004     126.104 # 0.0406,     163.559 # 0.0399,      10.495 # 0.0218 (  0.0428,  0.0375, -46.30,  0.0569,  0.0609)  0
     90005005     124.839 # 0.0461,     165.260 # 0.0612,      10.427 # 0.0493 (  0.0701,  0.0310, 136.52,  0.0766,  0.0911)  0
     90005006     128.135 # 0.0427,     164.136 # 0.0457,      10.499 # 0.0262 (  0.0466,  0.0417, 128.88,  0.0625,  0.0678)  0
     90005007     128.094 # 0.0443,     163.654 # 0.0586,      10.510 # 0.0323 (  0.0588,  0.0441, 106.38,  0.0735,  0.0803)  0
     90007002      75.236 # 0.5047,     116.930 # 0.4581,      17.989 # 0.3864 (  0.5559,  0.3944, -40.55,  0.6816,  0.7835)  0
     90008002     107.504 # 0.6939,     105.489 # 0.4806,      17.875 # 0.4476 (  0.6953,  0.4784,  -5.73,  0.8440,  0.9554)  0
     90009002     139.073 # 0.5106,     121.103 # 0.5204,      17.794 # 0.4367 (  0.5723,  0.4517,  52.59,  0.7291,  0.8498)  0
     90010002     149.939 # 0.3433,     154.565 # 0.4075,      18.344 # 0.3702 (  0.4373,  0.3043,  66.25,  0.5328,  0.6488)  0
 t: trace  683   2.355E+03 # 1.5941,   7.235E+03 # 2.7940,   1.993E+02 # 0.4637 (  9.789E+03 # 1.8764 )

 ROT =        6 subtype=  4
              6   129.47591 # 0.0733,   117.84239 # 0.0742,    98.29734 # 0.0646
 ROT =        7 subtype=  4
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           7   130.21938 # 0.0729,   117.73586 # 0.0745,    99.15755 # 0.0643
ROT =      8 subtype=  4
           8   123.14093 # 0.0742,   117.85165 # 0.0745,  -301.26572 # 0.0661
ROT =      9 subtype=  4
           9   202.02847 # 0.1171,   117.02562 # 0.0839,  -200.45848 # 0.0785
ROT =     10 subtype=  4
          10   197.41766 # 0.1194,   120.64439 # 0.0927,   199.01447 # 0.0940
ROT =     11 subtype=  4
          11  -151.69542 # 0.0729,   113.98188 # 0.0914,    99.79858 # 0.0813
ROT =     12 subtype=  4
          12  -150.24881 # 0.0787,   114.39877 # 0.0852,    99.08366 # 0.0747
ROT =     17 subtype=  4
          17  -108.64433 # 0.1016,   140.21265 # 0.1083,    95.86702 # 0.0768
ROT =     18 subtype=  4
          18   -92.59796 # 0.1104,   140.97058 # 0.1049,   102.51364 # 0.0910
ROT =     19 subtype=  4
          19   -97.51654 # 0.0951,   116.40167 # 0.1085,   100.09282 # 0.0665
ROT =     20 subtype=  4
          20  -109.29102 # 0.0891,   116.77112 # 0.1104,    97.72475 # 0.0576
ROT =     22 subtype=  4
          22   -57.28141 # 0.1641,   121.29682 # 0.1454,  -201.09467 # 0.1056
ROT =     24 subtype=  4
          24   -53.47661 # 0.1679,   120.70505 # 0.1463,  -199.89954 # 0.1098
ROT =     25 subtype=  4
          25   -71.60319 # 0.0853,   106.42657 # 0.0921,   197.34665 # 0.1072
ROT =     26 subtype=  4
          26   -73.82250 # 0.0832,   103.44678 # 0.0865,   199.13293 # 0.1042
ROT =     27 subtype=  4
          27    57.34965 # 0.0866,   105.41988 # 0.1068,    99.42570 # 0.1366
ROT =     28 subtype=  4
          28    63.70479 # 0.0834,   108.56939 # 0.0864,    98.83041 # 0.1167
ROT =     31 subtype=  4
          31    56.20117 # 0.2275,   103.61385 # 0.2763,    97.70205 # 0.3717
ROT =     32 subtype=  4
          32    54.42906 # 0.2320,   102.13678 # 0.2758,    98.65560 # 0.3589
ROT =     33 subtype=  4
          33   -15.70149 # 0.2037,   116.24781 # 0.1360,    98.01060 # 0.0937
ROT =     34 subtype=  4
          34    -8.24633 # 0.2073,   116.46909 # 0.1356,    98.32833 # 0.0948
ROT =     35 subtype=  4
          35   -23.22309 # 0.2015,   113.91190 # 0.1446,    99.39798 # 0.1156
ROT =     36 subtype=  4
          36   -31.67048 # 0.2038,   122.23615 # 0.1404,    98.42210 # 0.1303
ROT =     37 subtype=  4
          37    55.58197 # 0.0982,   108.59145 # 0.1536,    99.74657 # 0.1650
ROT =     38 subtype=  4
          38    60.67796 # 0.0979,   109.47668 # 0.1426,   100.72027 # 0.1714
ROT =     54 subtype=  4
          54   183.20219 # 0.1658,   109.59214 # 0.1290,   199.85664 # 0.3033
ROT =     55 subtype=  4
          55   179.08476 # 0.1628,   109.39067 # 0.1389,   198.82776 # 0.3175
ROT =     56 subtype=  4
          56   102.78608 # 0.1375,   115.38016 # 0.1164,   100.04779 # 0.0831
ROT =     57 subtype=  4
          57    94.34206 # 0.1349,   117.59031 # 0.1121,   100.50255 # 0.0788
ROT =     58 subtype=  4
          58   101.83395 # 0.1210,   106.92322 # 0.0950,  -199.79655 # 0.0651
ROT =     59 subtype=  4
          59    93.36459 # 0.1247,   108.46164 # 0.0991,   200.06989 # 0.0721
ROT =     60 subtype=  4
          60   138.34340 # 0.0941,   121.42467 # 0.1022,    99.02888 # 0.0659
ROT =     61 subtype=  4
          61   129.61401 # 0.0725,   118.77407 # 0.0788,    98.26739 # 0.0531
ROT =     62 subtype=  4
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          62  -265.95496 # 0.0653,   107.70837 # 0.0670,   195.72333 # 0.0458
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          63   121.71526 # 0.0681,   104.33947 # 0.0680,  -203.77672 # 0.0520
ROT =     66 subtype=  4
          66   -57.86767 # 0.1099,   120.22075 # 0.1003,    -1.67738 # 0.0656
ROT =     67 subtype=  4
          67   -63.62158 # 0.1114,   120.94485 # 0.1043,    -1.26165 # 0.0645
ROT =     68 subtype=  4
          68  -161.39604 # 0.0865,   122.10575 # 0.0954,    98.37926 # 0.0557
ROT =     69 subtype=  4
          69  -178.21741 # 0.0947,   119.26110 # 0.0991,    97.07272 # 0.0603
ROT =    101 subtype=  2
         101    -0.00016 # 0.0017,    -0.00003 # 0.0017,   285.14981 # 0.0364
ROT =    102 subtype=  2
         102     0.00001 # 0.0017,     0.00002 # 0.0017,   173.37086 # 0.0434
ROT =    103 subtype=  2
         103     0.00000 # 0.0017,    -0.00003 # 0.0017,   212.17239 # 0.0444
ROT =    104 subtype=  2
         104     0.00008 # 0.0017,    -0.00006 # 0.0017,   162.41962 # 0.0412
ROT =    105 subtype=  2
         105     0.00005 # 0.0017,     0.00024 # 0.0017,    73.20536 # 0.0392
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ROT =    108 subtype=  4
         108     0.00000 # 0.0017,     0.00007 # 0.0017,   588.31226 # 0.0449
ROT =    109 subtype=  4
         109     0.00000 # 0.0017,    -0.00013 # 0.0017,    79.26185 # 0.0411
ROT =    110 subtype=  4
         110     0.00000 # 0.0017,     0.00002 # 0.0017,   231.96448 # 0.0395
ROT =    111 subtype=  4
         111     0.00000 # 0.0017,    -0.00026 # 0.0017,   271.15268 # 0.0379
ROT =    112 subtype=  4
         112     0.00000 # 0.0017,    -0.00008 # 0.0017,   133.38177 # 0.0324
ROT =    113 subtype=  4
         113     0.00000 # 0.0017,     0.00018 # 0.0017,   236.06300 # 0.0243
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ROT =    501 subtype=  2
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ROT =    502 subtype=  2
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ROT =    503 subtype=  2
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ROT =    504 subtype=  2
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ROT =    505 subtype=  2
         505    -0.00003 # 0.0017,    -0.00005 # 0.0017,   -56.36190 # 0.0408
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ROT =    507 subtype=  2
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         511     0.00003 # 0.0017,    -0.00001 # 0.0017,   105.34853 # 0.0334
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ROT =    513 subtype=  2
         513     0.00002 # 0.0017,     0.00007 # 0.0017,  -378.57968 # 0.0221
ROT =   1001 subtype=  2
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        1001  -175.69710 # 0.8010,   -85.40450 # 0.1701,   121.52986 # 0.9058
ROT =   1002 subtype=  4
        1002   199.96759 # 0.3292,   130.84572 # 0.2866,    96.07291 # 0.2461
ROT =   1003 subtype=  4
        1003   200.83189 # 0.1494,   115.49932 # 0.1436,    97.66042 # 0.1574
ROT =   1004 subtype=  4
        1004  -211.26544 # 0.8076,   151.35023 # 0.5138,    94.89342 # 0.3993
ROT =   1005 subtype=  4
        1005   186.01170 # 0.7620,   131.50134 # 0.4385,    96.45333 # 0.2344
ROT =   1006 subtype=  4
        1006   186.11919 # 0.9006,   112.33143 # 0.4263,    99.03787 # 0.1752
ROT =   1014 subtype=  4
        1014   188.88574 # 0.1525,   125.56261 # 0.1277,    97.21760 # 0.1465
ROT =   1059 subtype=  4
        1059  -106.24409 # 0.4230,   136.23428 # 0.2503,    99.12170 # 0.2160
ROT =   1060 subtype=  4
        1060  -108.05688 # 0.3698,   125.19357 # 0.2721,    99.20408 # 0.2074
ROT =   2004 subtype=  4
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ROT =   2005 subtype=  4
        2005    86.64717 # 0.7511,   132.29150 # 0.5915,    96.12986 # 0.2838
ROT =   2006 subtype=  4
        2006    86.40104 # 1.3308,   112.56103 # 1.6815,    98.53175 # 0.2168
ROT =   3004 subtype=  4
        3004  -110.81434 # 0.7649,   151.80484 # 0.4919,    95.45575 # 0.3449
ROT =   3005 subtype=  4
        3005  -114.28636 # 0.7931,   131.85568 # 0.6135,    96.10787 # 0.2972
ROT =   3006 subtype=  4
        3006  -114.67122 # 1.4484,   113.06010 # 1.5249,    98.47542 # 0.4082
ROT =   4004 subtype=  4
        4004   388.94653 # 0.9439,   151.39149 # 0.4799,    95.99892 # 0.4007
ROT =   4005 subtype=  4
        4005   387.09534 # 1.0108,   131.25700 # 0.7453,    96.29272 # 0.3433
ROT =   4006 subtype=  4
        4006   386.59586 # 2.0251,   113.16801 # 2.0657,    98.22252 # 0.6056
ROT =   5001 subtype=  4
        5001   159.73642 # 0.1842,   112.27571 # 0.1898,    -1.91239 # 0.2592
ROT =   5002 subtype=  4
        5002   161.95052 # 0.3093,   119.34458 # 0.4120,    -4.98068 # 0.2713
ROT =   5003 subtype=  4
        5003    59.78836 # 0.0796,   111.62363 # 0.0800,    97.44732 # 0.0986
ROT =   5004 subtype=  4
        5004     2.53065 # 0.1956,   134.47005 # 0.1447,   102.45300 # 0.1120
ROT =   5005 subtype=  4
        5005    12.51038 # 0.4386,   105.48126 # 0.3916,    99.64452 # 0.1375
ROT =   5006 subtype=  4
        5006     0.03443 # 0.2099,   116.98312 # 0.1424,     0.48326 # 0.0996
ROT =   5007 subtype=  4
        5007    -4.35609 # 0.3013,   113.32584 # 0.1818,     0.55266 # 0.1063
ROT =   7002 subtype=  4
        7002   249.57283 # 0.8682,   131.15160 # 0.6096,    96.07065 # 0.4757
ROT =   8002 subtype=  4
        8002   299.26517 # 1.0397,   131.09450 # 0.6918,    95.84283 # 0.5566
ROT =   9002 subtype=  4
        9002   350.42047 # 0.8725,   131.20871 # 0.6848,    96.21796 # 0.5096
ROT =  10002 subtype=  4
       10002     1.34974 # 0.6222,   130.44118 # 0.5237,    96.32976 # 0.4676
t: trace   94   6.533E-03 # 0.4556,   5.003E-03 # 0.3987,   1.517E-03 # 0.2195 (  1.305E-02 # 0.3718 )

IOR =99991000 subtype=  1
     99991000   425.21033 # 1.6817,  -310.50027 # 1.6946,  1226.78723 # 7.6673
IOR =99992000 subtype=  1
     99992000   425.39725 # 0.5898,  -318.93753 # 0.6325,   641.89380 # 0.9843
t: trace    2   4.310E+00 # 1.2601,   4.440E+00 # 1.2790,   8.109E+01 # 5.4661 (  8.984E+01 # 3.3218 )
```

```
ADPA=99991000 subtype=  , norme(   500.0000)
   1:       1    -1.444919E+00 # 1.12E+00    a/sig_a=  1.3
   2:       2    -2.631908E+00 # 1.12E+00    a/sig_a=  2.3     significant 98%
   3:       3    -4.770871E-01 # 4.30E+00    a/sig_a= 0.11     not significant ***
   4:       4    -1.060488E+01 # 4.33E+00    a/sig_a=  2.4     significant 98%
     K( 1: 1)= 100.00%
     K( 2: 1)=   4.40%, K( 2: 2)= 100.00%
     K( 3: 1)= -17.44%, K( 3: 2)=  -4.77%, K( 3: 3)= 100.00%
     K( 4: 1)=   6.93%, K( 4: 2)=   5.70%, K( 4: 3)= -93.72%, K( 4: 4)= 100.00%
ADPA=99992000 subtype=  , norme(     0.0000)
   1:       1    -6.002969E-01 # 2.21E-01    a/sig_a=  2.7     significant 99%
   2:       2    -4.752092E-01 # 2.19E-01    a/sig_a=  2.2     significant 97%
   3:       3    -3.589814E+01 # 1.36E+00    a/sig_a=  26.     significant 99.8%
   4:       4     7.060219E+00 # 1.53E+00    a/sig_a=  4.6     significant 99.8%
     K( 1: 1)= 100.00%
     K( 2: 1)=   0.38%, K( 2: 2)= 100.00%
     K( 3: 1)=   1.87%, K( 3: 2)=  -0.87%, K( 3: 3)= 100.00%
     K( 4: 1)=  -0.42%, K( 4: 2)=   6.08%, K( 4: 3)= -94.47%, K( 4: 4)= 100.00%
t: trace    8   5.969E+01 # 2.3450


t: trace(Qxx)=   9.939E+03 count=     2345
Variance Components Analysis:
PHO  SIG_l=  0.5000 S_gr= 2.33E+00 r= 1732.18 N=  2823  6.294E+01 2.355E+03 3.961E+03
PHO  SIG_l=  2.0000 S_gr= 1.17E+00 r= 2926.08 N=  3807  3.760E+01 1.005E+03 1.414E+03
PHO  SIG_l=  5.0000 S_gr= 1.84E+00 r=    7.96 N=     8  2.598E+00 6.709E+00 6.747E+00
PHO  SIG_l= 10.0000 S_gr= 8.48E-02 r=    9.95 N=    10  1.339E-01 1.790E-02 1.794E-02
PHO  SIG_l=  1.0000 S_gr= 2.65E+00 r=    1.59 N=     2  1.863E+00 2.795E+00 3.471E+00
PHO  SIG_l=  0.0100 S_gr= 7.72E+00 r=    0.08 N=    10  1.022E+01 1.133E+00 1.044E+02
PLR  SIG_l=  0.0200 S_gr= 2.04E+00 r=  168.87 N=   392  2.586E+01 1.758E+02 6.686E+02
PLR  SIG_l=  0.0150 S_gr= 2.31E+00 r=   39.09 N=    48  7.995E+00 5.227E+01 6.392E+01
ROT  SIG_l=  0.0010 S_gr= 1.84E+00 r=    0.15 N=    45  6.768E+00 1.298E-01 4.580E+01
IOR  SIG_l=  1.0000 S_gr= 2.11E+00 r=    0.07 N=     2  1.643E+00 7.363E-02 2.698E+00
IOR  SIG_l=  5.0000 S_gr= 2.50E+00 r=    1.99 N=     2  1.769E+00 3.114E+00 3.131E+00

CPU-time  R:   26.09, x: 0.34, qvv:  492.79, qxx:  118.64, total:  637.85 sec.
Storage:              274929        18869            7         295794 words used,  989584 available
  <***>   #                                                                                   $C  TTY     2192.4  18:53:34
  <***>                                                                                       $C  TTY     2192.4  18:53:34
  <***>                                                                                       $C  TTY     2192.5  18:53:34
  <***>                                                                                       $C  TTY     2192.5  18:53:34
  <***>                                                                                       $C  TTY     2192.5  18:53:34
  <***>   $d                                                                                  $C  TTY     2192.5  18:54:26
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

  <***>                                                                                       $C  TTY     2192.6  18:54:26
  <***>   co sa(asuncion.bin).                                                                $C  TTY     2192.6  18:54:46
< File ASUNCION.BIN                    opened UNFORMAT UNKNOWN  SEQUENTI > F

 48773 Words saved to file <ASUNCION.BIN                   > 00/06/08 18:54:46

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  <***>   $d                                                                                  $C  TTY     2192.7  18:56:57
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

  <***>                                                                                       $C  TTY     2192.7  18:56:57
  <***>   co prot(prot).                                                                      $C  TTY     2192.7  18:57:11
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ANALYSIS OF THE RESIDUALS

POLYGONAL						
POINT	**X**	**eX**	**Y**	**eY**	**Z**	**eZ**
101	100.0000	0.0002	100.0000	0.0002	10.0000	0.0002
102	118.6820	0.0110	108.6420	0.0097	10.0350	0.0045
103	118.5310	0.0153	128.3870	0.0152	9.5830	0.0057
104	120.8900	0.0226	149.0260	0.0194	9.1590	0.0063
105	119.4210	0.0307	167.6630	0.0212	8.6940	0.0068
106	111.2300	0.0313	168.6040	0.0190	8.3050	0.0070
107	104.4410	0.0317	169.9800	0.0176	7.9810	0.0070
108	95.4890	0.0388	185.7730	0.0175	7.6860	0.0075
109	77.6240	0.0373	182.8720	0.0183	7.7270	0.0075
110	72.7800	0.0254	155.7570	0.0162	8.7390	0.0072
111	68.3030	0.0179	130.5760	0.0136	9.3020	0.0070
112	70.1150	0.0152	101.4120	0.0064	9.7120	0.0050
113	83.9890	0.0112	100.0000	0.0002	9.8450	0.0039
MAX		**0.0388**		**0.0212**		**0.0075**
MIN		**0.0002**		**0.0002**		**0.0002**
MEAN VALUE		**0.0222**		**0.0134**		**0.0058**

CONTROL POINTS						
POINT	**X**	**eX**	**Y**	**eY**	**Z**	**eZ**
201	113.3960	0.0149	118.4920	0.0126	23.8370	0.0134
204	113.3870	0.0149	118.4510	0.0144	14.1080	0.0068
205	113.3410	0.0156	121.1050	0.0152	11.0150	0.0065
206	113.3310	0.0156	122.0310	0.0133	21.0670	0.0109
207	113.9100	0.0527	128.1610	0.1192	21.1580	0.0351
208	114.6570	0.0192	133.9220	0.0183	10.9470	0.0065
209	114.9210	0.0186	133.5970	0.0169	14.8930	0.0082
210	115.3420	0.0197	138.0010	0.0185	14.8900	0.0076
211	115.0000	0.0198	137.7080	0.0199	11.0720	0.0070
212	114.5200	0.0195	135.8430	0.0190	11.7470	0.0069
213	114.7620	0.0192	135.8660	0.0171	17.2040	0.0092
214	115.4530	0.0222	142.5020	0.0203	23.7500	0.0121
215	115.9520	0.0221	142.2960	0.0199	26.3790	0.0134
216	113.8690	0.0173	127.1390	0.0142	16.2050	0.0093
217	118.1940	0.0322	166.8240	0.0255	18.6420	0.0134
218	117.1400	0.0278	159.6060	0.0238	10.8810	0.0074
219	117.2030	0.0285	161.3350	0.0213	14.0380	0.0082
220	116.9000	0.0273	158.1570	0.0205	14.0920	0.0078
221	117.7930	0.0315	166.1670	0.0220	10.8160	0.0071
222	116.1300	0.0255	150.7400	0.0185	11.2500	0.0068
223	86.2500	0.0327	169.5310	0.0182	18.1500	0.0099
224	86.2770	0.0327	169.5030	0.0185	16.7810	0.0097
225	87.3780	0.0315	164.1570	0.0187	17.3320	0.0135
226	86.2880	0.0726	169.4590	0.0953	8.8760	0.0110

227	85.0730	0.0313	157.4330	0.0167	8.9200	0.0094
228	84.9460	0.0317	155.9740	0.0166	8.9540	0.0095
229	84.6260	0.0318	154.7200	0.0166	10.9630	0.0091
230	84.6870	0.0325	169.0410	0.0205	10.0120	0.0107
231	84.9030	0.0287	155.7540	0.0164	16.4260	0.0101
232	84.7650	0.0274	154.6810	0.0161	18.2580	0.0102
233	83.0530	0.0231	140.0750	0.0164	10.9610	0.0097
235	81.8620	0.0210	127.1060	0.0143	11.1070	0.0088
236	81.7460	0.0215	127.0550	0.0372	9.4700	0.0123
237	82.5140	0.0241	133.7360	0.0146	12.3080	0.0096
238	84.0240	0.0277	148.4960	0.0188	14.6780	0.0103
239	83.9580	0.0266	148.8910	0.0170	10.8960	0.0093
240	82.4910	0.0220	133.9180	0.0144	17.0400	0.0102
241	88.5910	0.0282	148.1830	0.0166	25.9000	0.0158
242	81.7770	0.0218	127.0620	0.0137	18.2530	0.0114
243	82.4940	0.0216	133.2060	0.0138	25.2440	0.0133
244	81.8780	0.0230	127.1150	0.0140	25.3040	0.0155
245	82.1600	0.0225	130.0020	0.0137	21.6280	0.0128
246	82.2350	0.0236	130.0380	0.0138	28.7470	0.0179
247	86.0870	0.0251	147.8660	0.0158	21.3030	0.0108
248	86.2870	0.0257	149.6460	0.0158	21.3000	0.0107
250	99.8240	0.0397	164.9930	0.0268	26.7680	0.0288
251	88.6540	0.0272	148.8080	0.0165	25.7110	0.0159
252	104.6150	0.0415	151.5590	0.0252	41.5180	0.0339
253	104.7240	0.0534	150.3740	0.0244	44.8090	0.0512
254	104.6640	0.0534	150.5580	0.0244	44.8220	0.0512
255	98.7660	0.0354	148.9420	0.0195	32.0380	0.0210
256	99.1970	0.0483	153.2770	0.0232	32.0690	0.0253
257	92.5480	0.0301	141.1160	0.0184	24.1530	0.0177
258	104.5180	0.0525	149.8530	0.0236	43.5840	0.0478
259	94.1010	0.0358	158.1380	0.0200	25.9340	0.0252
260	94.5060	0.0508	138.9500	0.1129	25.5780	0.0492
261	88.3810	0.0200	125.9810	0.0315	25.3280	0.0198
262	82.3400	0.0166	126.4740	0.0285	25.2320	0.0179
263	88.3720	0.0244	125.9150	0.0515	11.1350	0.0115
265	85.5310	0.0162	126.2550	0.0240	23.4240	0.0139
266	89.4880	0.0225	120.3800	0.0381	31.3730	0.0445
267	89.9710	0.0232	120.7690	0.0268	13.6370	0.0094
268	94.8330	0.0249	115.3150	0.0264	28.0890	0.0257
269	96.0530	0.0293	119.3000	0.0294	14.1750	0.0210
270	105.3300	0.0134	114.2120	0.0182	13.5980	0.0070
271	107.5770	0.0134	114.0430	0.0157	27.9900	0.0168
272	101.3380	0.0120	116.4820	0.0183	30.9560	0.0209
273	101.0710	0.0129	118.7620	0.0210	16.3130	0.0087
274	113.0730	0.0125	117.2930	0.0155	27.9910	0.0171
275	110.3880	0.0128	118.0460	0.0156	18.3920	0.0087
276	112.9100	0.0134	117.3750	0.0166	13.6400	0.0064
277	106.1070	0.0310	167.6860	0.0187	11.5160	0.0084

278	94.7980	0.0331	169.3490	0.0177	18.5440	0.0113
279	85.9730	0.0336	169.9300	0.0197	17.2020	0.0101
280	106.0240	0.0335	167.7090	0.0192	14.7790	0.0101
281	95.1010	0.0442	169.1680	0.0183	9.4710	0.0087
282	87.5520	0.0342	169.6540	0.0200	13.7950	0.0099
283	99.2600	0.0323	165.4000	0.0223	26.3440	0.0158
284	113.0890	0.0341	164.1110	0.0237	26.3090	0.0151
285	93.6180	0.0319	158.7500	0.0237	26.3510	0.0162
286	104.6010	0.0382	150.3200	0.0591	46.6290	0.0608
287	104.2390	0.0449	150.6640	0.0707	43.6320	0.0715
MAX		**0.0726**		**0.1192**		**0.0715**
MIN		**0.0120**		**0.0126**		**0.0064**
MEAN VALUE		**0.0281**		**0.0244**		**0.0163**

POINTS OF THE GROUND FLOOR						
POINT	**X**	**eX**	**Y**	**eY**	**Z**	**eZ**
301	86.2060	0.0351	169.5700	0.0280	8.1410	0.0115
302	81.7020	0.0301	126.5850	0.0158	9.4310	0.0103
303	90.9350	0.0275	126.1460	0.0237	9.7710	0.0182
304	89.9050	0.0184	120.0940	0.0250	9.6010	0.0120
306	97.0280	0.0223	115.0070	0.0211	9.7550	0.0116
307	97.3320	0.0114	116.6350	0.0255	9.7630	0.0091
308	97.8590	0.0111	116.5050	0.0256	9.7640	0.0090
309	100.1950	0.0121	118.8110	0.0257	9.8210	0.0102
310	103.0040	0.0126	118.5400	0.0255	9.8220	0.0102
311	104.8080	0.0126	115.7680	0.0248	9.8050	0.0089
312	105.3630	0.0131	115.7900	0.0246	9.8140	0.0090
313	105.3410	0.0129	114.2800	0.0244	9.8150	0.0083
314	107.3770	0.0150	114.2230	0.0233	9.8490	0.0087
315	113.7260	0.0195	117.4690	0.0221	9.7710	0.0120
317	114.7180	0.0225	134.1660	0.0259	9.5050	0.0069
318	115.0460	0.0213	137.5000	0.0281	9.4320	0.0078
319	118.2280	0.0394	166.7220	0.0224	8.6890	0.0080
MAX		**0.0394**		**0.0281**		**0.0182**
MIN		**0.0111**		**0.0158**		**0.0069**
MEAN VALUE		**0.0198**		**0.0242**		**0.0101**

MODELLING POINTS						
POINT	**X**	**eX**	**Y**	**eY**	**Z**	**eZ**
1001	106.9330	0.1287	154.6220	0.1305	37.0160	0.1092
1002	103.6080	0.1375	154.9100	0.1987	37.0670	0.1352
1003	104.5910	0.1396	151.6620	0.1615	40.3960	0.1195
1004	105.3640	0.1375	151.3440	0.1456	40.5190	0.1252
1005	104.0600	0.1375	153.2780	0.1540	39.0520	0.1189
1006	106.2140	0.2102	152.7770	1.3761	39.2220	0.6718
1007	100.9650	0.1316	152.8690	0.0651	36.8960	0.0890
1008	102.2610	0.0805	152.1500	0.0729	39.0530	0.0651

1009	103.6710	0.0863	151.2010	0.0772	40.2890	0.0703
1010	100.1850	0.1632	149.2650	0.0688	36.6740	0.1062
1011	101.5120	0.1764	149.7000	0.0724	38.6370	0.1186
1012	103.5450	0.1987	150.1900	0.0771	40.2960	0.1337
1016	105.9490	0.2316	150.8190	0.1113	40.4730	0.1739
1017	107.9370	0.4153	151.4200	0.1063	38.6100	0.2889
1018	108.8360	0.1393	151.9700	0.0941	37.2150	0.1068
1019	106.1290	2.8983	145.4910	0.1401	35.1410	1.9990
1023	110.2340	0.1355	152.2120	0.0917	33.7230	0.0956
1024	103.1770	0.1327	155.8530	0.1870	33.7030	0.1167
1025	107.5530	0.1263	155.5810	0.1257	33.5560	0.1006
1026	99.7810	0.1183	153.2280	0.0541	33.6410	0.0715
1027	109.4410	0.1756	152.3500	0.1376	35.7720	0.1580
1028	105.9140	0.1389	149.8420	0.1272	40.4090	0.1178
1029	99.1790	0.1611	148.8620	0.0644	33.5260	0.0895
1030	86.2550	0.0991	147.6380	0.0443	22.2950	0.0449
1031	86.5250	0.0701	149.8020	0.0437	22.3770	0.0398
1032	87.0510	0.0699	149.6030	0.0412	23.6680	0.0411
1033	87.7500	0.0867	149.3080	0.0428	24.5630	0.0476
1034	88.4270	0.0921	148.7370	0.0460	25.1840	0.0504
1035	88.7320	0.0820	148.8970	0.0545	25.2120	0.0490
1036	88.4950	0.0673	149.8350	0.0467	24.6760	0.0424
1037	88.3050	0.0658	150.5370	0.0460	23.8890	0.0409
1038	88.0800	0.0665	151.1360	0.0577	22.3900	0.0454
1039	90.1290	0.0900	150.9650	0.2049	22.3700	0.0482
1040	89.8860	0.0996	150.3810	0.2546	23.8270	0.0854
1041	86.5450	0.1359	147.7880	0.0415	23.4970	0.0598
1042	87.7410	0.1681	146.4950	0.0475	23.7060	0.0639
1043	90.6280	8.2519	148.1340	10.7038	24.6830	4.2092
1044	90.4390	7.8997	146.8010	9.9238	22.7620	3.4882
1045	87.4740	0.1938	146.0460	0.0540	22.3330	0.0598
1046	87.2890	0.1427	147.9900	0.0429	24.4270	0.0654
1047	88.0940	0.1734	147.0840	0.0487	24.5930	0.0692
1048	88.6950	7.2862	146.5660	9.7261	24.4840	3.9473
1049	88.3060	0.1629	148.2890	0.0474	25.1720	0.0720
1050	88.6200	0.2163	148.0190	0.0627	25.1740	0.0789
1051	88.7640	0.5337	147.8410	2.2311	25.3600	0.3996
1052	89.4110	0.4912	149.2450	2.1033	24.6790	0.3614
1054	107.8310	0.2309	148.7770	0.1266	38.6100	0.1529
1056	102.4410	0.1156	146.6700	0.0650	36.9560	0.0763
1057	101.9570	0.1189	145.4430	0.0693	33.5090	0.0711
1058	104.8480	0.0795	150.4300	0.0765	44.8280	0.0687
1059	106.0100	0.1148	145.9730	0.1284	36.7010	0.0990
1060	106.3830	0.1184	144.9180	0.1215	33.5410	0.0910
1061	109.9260	0.1247	147.7060	0.1069	33.5600	0.0921
1062	108.9040	0.1270	148.1720	0.1119	36.6960	0.0996
1063	105.7250	0.1531	147.1290	0.2152	38.5810	0.1527
1064	105.1290	0.1154	149.3030	0.1516	40.4160	0.1179

1065	106.5780	0.1577	144.3190	0.1867	28.6040	0.1075
1067	110.4510	0.1256	147.4370	0.0684	28.6110	0.0756
1068	110.8430	0.1095	152.3270	0.0620	28.7960	0.0699
1105	113.3810	0.1135	121.1160	0.1435	11.0170	0.0373
1201	111.9430	0.1759	156.4310	0.0705	25.9650	0.1106
1202	112.5260	0.1366	156.9610	0.0609	26.2790	0.0930
1203	111.9410	1.0759	156.5880	0.2121	20.3990	0.0621
1204	112.4380	0.1072	163.5530	0.0753	20.3480	0.0445
1205	117.3700	0.1041	156.0790	0.0604	18.6950	0.0293
1206	113.6390	0.1944	119.6090	0.6836	24.0990	0.1998
1207	113.2980	0.2008	120.3310	0.6594	23.5920	0.1865
1208	116.0460	0.1248	142.8860	0.2828	24.0620	0.1199
1209	115.3740	0.9368	142.8700	1.8581	24.3020	0.4808
1210	115.4520	0.0705	142.9150	0.1254	26.0580	0.0643
1211	116.0760	1.0195	143.7870	2.9627	9.3680	0.1587
1216	117.9000	0.1502	166.5400	0.0468	10.8130	0.0235
1217	117.7340	0.1423	166.4390	0.0448	10.9490	0.0239
1218	115.0780	0.0660	137.9500	0.2516	10.9510	0.0608
1219	115.1640	0.0661	138.1730	0.2493	9.4830	0.0601
1223	114.6660	1.2142	140.2230	6.7490	9.4200	0.5356
1225	116.8600	0.1104	156.0000	0.0610	18.8000	0.0292
1231	115.9540	0.0644	148.6330	0.0636	21.3700	0.0413
1232	106.7520	0.1041	143.9950	0.0594	32.8950	0.0563
1233	106.7010	0.1033	144.3780	0.0591	32.5480	0.0558
1234	110.8080	0.1051	147.3670	0.0634	32.9110	0.0745
1235	110.5330	0.1049	147.5490	0.0636	32.5620	0.0732
1237	103.8680	0.0651	168.0280	0.0643	9.4770	0.0277
1238	113.5070	0.0356	119.1690	0.0690	9.8350	0.0204
1301	94.9900	0.0808	168.6620	0.0773	16.7360	0.0554
1302	94.9020	0.1060	168.5090	0.0962	8.0550	0.0587
1303	86.1280	0.0568	169.6090	0.0704	8.2050	0.0377
1304	86.2400	0.0464	169.5240	0.0478	18.2950	0.0158
1305	95.1400	0.0713	168.8980	0.0582	18.2450	0.0259
1306	95.1900	0.0806	169.0460	0.0750	17.2100	0.0558
1307	95.0450	0.1061	168.5880	0.0955	8.0500	0.0586
1308	99.8460	0.0768	164.7900	0.0616	26.0370	0.0389
1309	106.1650	0.1412	155.6700	0.1547	28.8010	0.0657
1310	117.3470	0.0650	156.4420	0.0466	26.2690	0.0476
1311	95.0290	0.0809	168.6450	0.0777	17.4380	0.0570
1312	86.2470	0.0732	169.6240	0.0869	17.3490	0.0186
1313	118.0490	0.1426	166.7180	0.0469	8.6610	0.0321
1314	98.5830	0.0918	168.7780	0.0634	8.0350	0.0483
1315	111.3950	0.0785	152.5490	0.0587	32.8420	0.0634
1316	111.1030	0.0751	152.4640	0.0516	32.5180	0.0595
1317	108.0070	0.0549	156.5310	0.0431	32.8280	0.0354
1318	107.8950	0.0549	156.2490	0.0432	32.5310	0.0353
1319	102.8840	0.0544	156.6930	0.0446	32.5360	0.0345
1320	99.0470	0.0490	153.5390	0.0451	32.5250	0.0341

1322	102.8270	1.0064	156.8350	1.0445	27.6370	0.2879
1323	107.7450	0.1199	156.1630	0.1163	29.1900	0.0851
1324	95.0130	0.0761	168.7290	0.0628	18.2090	0.0261
1401	84.8830	0.0760	153.5810	0.2342	17.2840	0.0230
1402	84.7530	0.0418	154.7910	0.0918	16.7510	0.0218
1403	92.3080	0.0454	144.6620	0.0540	26.4270	0.0310
1404	92.9970	0.0475	145.1720	0.0610	25.9670	0.0321
1405	94.1230	0.0492	158.1570	0.0515	25.8740	0.0287
1406	84.9090	0.0976	154.2560	0.3232	17.3850	0.0234
1407	87.9550	0.0390	151.3010	0.0496	21.7400	0.0245
1408	86.2500	0.0341	149.8600	0.0361	21.6970	0.0218
1409	86.0590	0.0342	147.5550	0.0365	21.6990	0.0225
1410	87.3070	0.1364	145.8280	0.0424	21.6400	0.0523
1411	87.9010	0.0389	151.6080	0.0494	22.0200	0.0245
1412	86.0340	0.0340	150.0300	0.0360	22.0370	0.0219
1413	85.7920	0.0341	147.4840	0.0364	22.0450	0.0226
1414	82.1480	0.0382	133.7800	0.0612	17.3670	0.0307
1415	84.4580	0.0431	155.3030	0.0500	17.3070	0.0286
1416	84.5830	0.1823	154.7210	0.0634	16.9550	0.0734
1417	84.5890	0.0421	154.7310	0.0805	8.8300	0.0356
1418	82.3300	0.0592	133.4260	0.0711	9.4080	0.0329
1419	84.7060	0.0442	154.8900	0.0867	8.8480	0.0373
1420	98.2980	0.0482	148.4880	0.0482	32.8920	0.0348
1421	98.6670	0.0492	148.6480	0.0486	32.5300	0.0348
1422	101.7290	0.1051	144.8630	0.0599	32.4980	0.0599
1424	90.6340	0.1762	150.2380	0.4039	21.9260	0.0591
1425	90.5740	0.1709	151.1470	0.3822	22.1450	0.0601
1426	89.2020	0.0458	156.5160	0.0689	19.8440	0.0227
1427	88.9970	0.0409	154.1990	0.0521	19.8300	0.0230
1428	89.2570	0.0565	156.5840	0.0769	17.7720	0.0343
1429	89.0980	0.0566	154.2110	0.0757	17.7870	0.0359
1430	94.0970	0.0610	155.9000	0.0791	21.4000	0.0267
1431	95.6560	0.7540	153.7480	1.1955	18.5320	0.0798
1432	93.8650	0.0647	153.7380	0.0670	21.5170	0.0379
1433	98.5170	0.1643	158.0620	0.1855	26.3990	0.0704
1434	98.7890	0.1674	157.7660	0.1891	25.8730	0.0672
1435	93.3720	0.4236	163.0630	0.5262	18.6440	0.0514
1436	93.3440	0.4160	163.2600	0.5126	18.3830	0.0559
1437	94.3310	0.5820	158.0560	0.8495	18.6180	0.0650
1438	98.6450	0.7550	157.6210	0.9035	20.4260	0.0421
1439	87.4580	0.2834	145.8520	0.0480	18.7900	0.0510
1440	85.9720	0.0504	147.5840	0.0427	18.1120	0.0303
1441	86.3640	0.0494	149.9660	0.0429	18.0600	0.0298
1442	88.0940	0.0553	151.3710	0.0748	18.1180	0.0362
1443	101.5320	0.1108	144.5310	0.0604	32.9040	0.0625
1444	91.6880	0.4816	133.8750	0.1513	24.3840	0.1225
1445	98.9760	0.0722	153.5360	0.0588	28.5680	0.0651
1446	98.5100	0.1748	148.6330	0.0689	28.6080	0.0743

1447	100.9630	1.6142	151.8040	0.2406	29.3720	0.4643
1448	93.6770	0.0529	152.6420	0.0668	21.5700	0.0276
1449	93.6880	0.0502	152.5770	0.0589	25.0130	0.0302
1450	101.6180	0.1284	144.7960	0.1049	28.6130	0.0813
1451	89.2590	1.1379	145.5770	0.0570	21.6680	0.1586
1452	89.1340	1.1425	145.3020	0.0581	21.9330	0.1703
1453	89.3550	1.1240	145.6190	0.0572	19.0180	0.0660
1454	91.8800	0.4840	133.8620	0.1524	22.7170	0.1033
1455	92.0220	0.4820	133.8660	0.1521	20.7200	0.0851
1456	92.4530	1.4475	145.2070	0.0670	24.3090	0.3017
1458	97.1220	1.9874	144.1850	0.1117	26.3420	0.4721
1459	95.3800	1.7684	144.6910	0.0868	25.6390	0.4054
1460	92.7670	0.4319	143.1820	0.0786	20.7880	0.0832
1461	99.1930	0.9644	136.8520	0.1909	26.6540	0.2393
1462	84.0790	0.1484	135.9780	0.0561	18.0480	0.0471
1463	103.0730	0.1354	147.5080	0.2260	38.5760	0.1535
1464	104.2030	0.1339	149.4250	0.1249	40.3760	0.1152
1602	97.1620	0.0400	114.8300	0.0303	29.0970	0.0316
1603	97.4410	0.1041	116.8400	0.0903	29.3050	0.0909
1604	101.4330	0.0879	116.7910	0.0897	30.1620	0.0948
1605	97.3640	0.1009	116.7470	0.0870	27.9470	0.0821
1606	105.2990	0.0980	115.9970	0.0554	27.8840	0.0615
1607	105.3220	0.0341	114.0930	0.0321	29.0730	0.0349
1609	105.2170	0.1003	115.9540	0.0557	28.9870	0.0641
1624	96.9340	0.0693	117.2150	0.0676	26.8800	0.0588
1625	96.6650	0.0407	115.5380	0.0306	26.8580	0.0297
1626	95.6640	0.0412	115.7270	0.0306	26.8740	0.0296
1627	105.7830	0.0796	116.2550	0.0541	26.7870	0.0555
1628	105.8900	0.0338	114.6980	0.0332	26.8610	0.0325
1629	106.9150	0.0553	114.7350	0.0682	26.9500	0.0680
1663	106.7730	0.0443	115.0390	0.0549	14.1900	0.0205
1664	106.0140	0.0385	114.8900	0.0417	14.1910	0.0195
1665	107.0270	0.2440	116.3470	0.3182	28.9600	0.3258
1666	107.6180	0.1841	115.5090	0.2390	14.0150	0.0383
1667	107.3200	0.0411	114.2570	0.0504	13.5620	0.0195
1668	107.3400	0.1918	115.8700	0.2495	13.5270	0.0331
1669	105.3840	0.0381	114.2630	0.0394	9.8360	0.0184
1670	107.3210	0.0394	114.2430	0.0486	9.8590	0.0187
1671	107.3770	0.1809	115.7630	0.2346	9.8140	0.0347
1672	96.6320	0.0742	115.9700	0.0637	14.0760	0.0255
1673	95.8280	0.0437	115.8800	0.0311	14.1160	0.0215
1674	95.0510	0.0447	115.5150	0.0309	13.5590	0.0216
1675	95.0660	0.0446	115.3990	0.0313	9.6640	0.0211
1676	96.9630	0.0432	115.0530	0.0315	9.7120	0.0205
1677	97.3350	0.0709	116.6540	0.0655	9.7430	0.0247
1678	97.3140	0.0751	116.8460	0.0687	13.4780	0.0255
1679	97.0300	0.0433	115.1720	0.0312	13.5260	0.0210
1680	105.4140	0.0752	116.0170	0.0735	13.7170	0.0474

1681	105.4230	0.0720	116.1570	0.0730	9.7300	0.0440
1682	105.8240	0.0778	116.3380	0.0748	14.2730	0.0487
1683	101.4230	0.0516	116.7550	0.0704	22.0660	0.0477
1684	102.1860	0.1635	116.2940	1.1777	21.6980	0.6887
1685	101.6820	0.0746	118.6290	0.0999	20.5050	0.0537
1686	100.4230	0.0547	117.0050	0.0729	22.0650	0.0488
1687	100.9230	0.0779	118.7830	0.1016	20.3700	0.0538
1688	102.3680	0.0714	118.4640	0.0979	20.3540	0.0524
1689	99.9080	0.0553	116.8900	0.0723	21.5820	0.0473
1690	102.9460	0.2140	116.5300	1.2059	21.5390	0.6849
1691	99.2770	0.0569	117.0400	0.0734	21.1450	0.0465
1692	103.6590	0.2660	117.0110	1.2638	21.3720	0.6872
1693	98.7320	0.0584	117.2690	0.0749	20.6350	0.0455
1694	104.1090	0.2866	116.5880	1.1946	20.5740	0.6115
1695	98.3940	0.0583	117.2340	0.0744	19.8770	0.0433
1696	104.4740	0.3048	116.5040	1.1677	19.8330	0.5519
1697	98.2300	0.0579	117.2450	0.0739	19.1030	0.0410
1698	104.8570	0.3336	116.9350	1.2116	19.4770	0.5352
1699	100.3420	0.0801	118.8550	0.1023	20.0740	0.0529
1700	103.0280	0.3379	118.4080	2.0422	19.7980	0.8711
1701	100.0150	0.0805	118.7790	0.1013	19.5010	0.0506
1702	101.6720	0.1506	119.2280	1.8283	19.0310	0.6776
1703	103.1880	0.3468	118.0830	1.9678	19.2540	0.7982
1704	103.3350	0.2447	118.3810	1.3620	18.8120	0.5111
1705	99.7990	0.0650	118.8480	0.0871	18.9270	0.0439
1706	99.8210	0.0548	118.4000	0.0770	17.6800	0.0372
1707	103.2160	0.2245	117.7990	1.2535	17.5630	0.4027
1708	98.3100	0.0786	117.0680	0.0870	17.6050	0.0418
1709	104.7700	0.4722	116.8790	1.7292	17.8170	0.6110
1710	99.9050	0.0535	118.4160	0.0759	16.6690	0.0346
1711	98.6120	0.0773	117.2500	0.0871	16.6050	0.0388
1712	103.2550	0.2273	118.2960	1.2888	16.6810	0.3456
1714	104.0400	0.3377	115.8870	1.2845	16.3780	0.3696
1716	100.0380	0.0699	118.2430	0.0873	9.7890	0.0308
1717	98.6440	0.0705	117.1650	0.0808	9.7500	0.0304
1718	103.1780	0.3065	118.1470	1.7493	9.7240	0.1737
1719	104.0950	0.3528	116.2990	1.4443	9.8250	0.1509
1720	98.2640	0.0713	117.0280	0.0803	9.7920	0.0304
1721	104.5180	0.3863	116.2040	1.4345	9.8590	0.1480
1722	101.6040	0.1781	118.9600	1.8817	9.8060	0.1724
1723	97.9480	0.0550	116.4330	0.0683	17.5700	0.0359
1724	97.8610	0.0709	116.5890	0.0778	9.7750	0.0301
1725	96.9340	0.0584	116.6820	0.0713	17.5770	0.0368
1726	104.7940	0.3963	115.6470	1.3477	9.8320	0.1457
1727	104.8530	0.4037	115.7400	1.2951	17.5510	0.4650
1728	105.7160	0.3532	115.6820	1.0235	17.5370	0.3686
1729	100.2330	0.0727	119.2110	0.0947	9.8360	0.0318
1730	103.1180	0.3073	118.5190	1.8189	9.8210	0.1690

1731	90.5360	0.0655	119.9390	0.0414	9.5250	0.0301
1732	89.7260	0.0676	120.5320	0.0429	13.5230	0.0312
1733	89.6980	0.0664	120.6490	0.0424	9.5730	0.0300
1734	92.3970	0.0682	119.4600	0.0441	13.5610	0.0328
1735	92.4340	0.0664	119.5900	0.0436	9.5480	0.0316
1736	92.2680	0.0691	119.7230	0.0447	14.1420	0.0332
1737	90.7570	0.0679	120.0110	0.0426	14.1130	0.0318
1738	90.7610	0.0446	119.9100	0.0415	26.7530	0.0389
1739	92.0310	0.0452	119.4220	0.0430	26.6330	0.0399
1740	94.3020	0.0571	117.9870	0.0433	26.5930	0.0437
1741	94.4990	0.4912	118.1800	1.7727	14.3600	0.2726
1742	93.8710	0.0671	118.3500	0.0434	14.1170	0.0334
1743	93.9030	0.0667	118.3260	0.0433	13.5800	0.0330
1744	93.2710	0.0575	118.7330	0.0436	26.5810	0.0435
1745	93.8740	0.0647	118.4070	0.0427	9.6740	0.0317
1746	108.5770	0.0434	117.0910	0.0676	14.2180	0.0213
1747	109.0290	0.0375	117.2080	0.0623	26.9170	0.0545
1748	110.0760	0.0354	117.5400	0.0640	26.9150	0.0550
1749	111.5470	0.0324	117.8390	0.0656	26.9650	0.0556
1750	112.5830	0.0301	117.7720	0.0652	26.9270	0.0554
1751	109.9950	0.0405	117.8810	0.0731	14.2650	0.0215
1752	111.3820	0.0364	117.8610	0.0732	14.2530	0.0212
1753	112.5560	0.0444	117.8050	0.1033	14.2300	0.0233
1754	112.9400	0.0406	117.2880	0.0949	9.7620	0.0215
1755	113.5490	0.0388	117.7360	0.0997	9.7450	0.0219
1756	113.5260	0.0403	118.0100	0.1062	13.6720	0.0219
1757	110.9030	0.0374	117.7360	0.0720	13.5320	0.0203
1758	110.7800	0.0494	117.4900	0.0943	9.7360	0.0218
1759	109.5690	0.0388	117.0800	0.0649	9.7630	0.0200
1760	109.6380	0.0405	117.3440	0.0692	13.5210	0.0204
1762	96.9410	0.0823	117.1040	0.1648	14.2640	0.0620
1763	90.1770	0.0492	119.5690	0.0412	27.7830	0.0417
1764	92.4490	0.0506	118.9180	0.0432	27.7450	0.0432
1765	93.9640	0.0680	117.9310	0.0453	27.7610	0.0483
1766	110.8480	0.0385	117.2720	0.0728	28.0020	0.0669
1767	109.1140	0.0513	116.7000	0.0828	27.9710	0.0781
1769	96.9910	0.0637	117.3900	0.0639	21.9100	0.0420
1770	105.8030	0.0632	116.3400	0.0719	21.8210	0.0557
1771	108.5310	0.1741	116.6110	0.2612	13.4860	0.0325
1772	108.0610	0.1752	116.8030	0.2555	9.7450	0.0364
1773	113.3320	0.1174	118.5510	0.3331	27.0070	0.2677
1774	113.4810	0.1194	119.7690	0.3681	27.0310	0.2785
1775	114.0970	0.1077	119.5540	0.3613	27.9670	0.2931
1776	113.3140	0.0418	118.3550	0.1093	14.2240	0.0236
1777	113.3460	0.1042	119.7900	0.3145	14.2080	0.0424
1778	89.5420	0.0691	120.4160	0.0513	27.7980	0.0516
1779	90.1030	0.0695	120.8040	0.0522	26.8130	0.0498
1780	89.6210	0.0712	121.8780	0.0551	27.7820	0.0527

1786	90.1680	0.0711	121.8460	0.0550	26.8030	0.0506
1787	91.1650	0.5887	121.1940	0.2478	14.2270	0.0613
1788	91.0010	0.6104	122.3410	0.2779	14.2490	0.0635
1790	95.0280	0.8718	116.6610	0.2404	27.9730	0.3715
1791	94.9680	0.7850	116.8930	0.2222	14.1200	0.0686
1792	94.7340	0.7722	116.7730	0.2176	13.5580	0.0589
1793	94.9610	0.7615	116.9690	0.2175	9.7110	0.0461
1901	82.9640	0.0351	133.6330	0.0470	25.2330	0.0285
1902	82.4730	0.0560	133.1000	0.0535	18.5570	0.0296
1903	82.9540	0.0669	133.6020	0.0664	18.4780	0.0454
1904	89.1470	0.0399	133.0270	0.0744	25.2320	0.0322
1905	89.5840	0.0404	132.4800	0.0758	25.2360	0.0318
1906	81.9240	0.0328	127.0800	0.0341	25.3090	0.0257
1907	83.0310	0.0351	133.6730	0.0475	25.9330	0.0290
1908	82.5090	0.0378	133.2060	0.0367	25.9330	0.0269
1909	84.0090	0.0363	133.5450	0.1540	26.4270	0.0479
1910	84.6690	0.0362	133.5350	0.0551	28.1020	0.0317
1911	84.5920	0.0394	133.5230	0.0769	31.1670	0.0408
1912	87.5400	0.0420	133.1400	0.0849	31.2440	0.0423
1913	87.6100	0.0441	133.1950	0.1807	28.1520	0.0603
1914	88.1740	0.0460	133.3060	0.1912	26.4060	0.0558
1915	89.2030	0.0398	133.0090	0.0734	25.9670	0.0327
1916	81.5410	0.0315	128.5200	0.0358	32.2400	0.0280
1917	82.1180	0.0344	132.0490	0.0410	32.3610	0.0298
1918	84.4180	0.0375	134.0720	0.0738	32.2480	0.0411
1919	87.7710	0.0423	133.6090	0.0853	32.3280	0.0438
1920	89.9950	0.0430	131.0540	0.0721	32.2430	0.0390
1921	84.4500	0.0377	133.8790	0.0640	34.2770	0.0403
1922	82.1840	0.0337	131.8490	0.0385	34.3960	0.0299
1923	87.7290	0.0396	133.3750	0.0672	34.3490	0.0411
1924	84.5770	0.0420	133.5130	0.0726	40.9780	0.0519
1925	82.3450	0.0581	131.7460	0.0534	40.8610	0.0600
1926	82.0790	0.0536	128.6170	0.0544	40.9040	0.0627
1927	87.6530	0.0445	133.1450	0.0922	41.0070	0.0584
1928	89.3740	0.0428	130.8750	0.0804	41.1040	0.0526
1929	90.1580	0.0461	131.0420	0.0891	42.1700	0.0573
1930	88.2550	0.0456	133.8820	0.0946	42.3550	0.0664
1931	84.2000	0.0427	134.0960	0.0936	42.5640	0.0665
1932	81.7640	0.0443	132.0230	0.0469	42.0650	0.0458
1933	82.5280	0.0322	133.1890	0.0350	25.2810	0.0237
1934	81.8850	0.0420	127.0110	0.0404	18.5790	0.0265
1935	82.6900	0.0376	131.9210	0.0420	31.1660	0.0317
1936	82.0370	0.0323	128.7430	0.0385	31.1620	0.0285
1937	82.4480	0.0635	131.6800	0.0440	28.0520	0.0424
1938	82.6130	0.0634	132.2240	0.0441	26.5380	0.0398
1940	83.1760	0.0412	128.9550	0.0524	47.7860	0.0461
1941	83.5330	0.0410	131.1140	0.0551	47.7760	0.0475
1942	84.9480	0.0462	132.3300	0.1071	47.7370	0.0792

1943	86.9870	0.0462	132.0180	0.1032	47.8110	0.0747
1944	88.2440	0.0475	130.4680	0.1033	47.9730	0.0741
1945	83.9190	0.0473	129.2470	0.0911	51.7040	0.0719
1946	84.1910	0.0488	130.6240	0.1217	51.7150	0.0955
1947	85.1960	0.0490	131.4790	0.1195	51.6190	0.0942
1948	86.5310	0.0479	131.2660	0.1133	51.7070	0.0875
1949	87.4810	0.0488	130.0990	0.1131	51.7260	0.0864
1950	89.7070	0.0411	130.9480	0.0696	34.3290	0.0405
1951	81.8290	0.0345	128.4630	0.0374	34.3980	0.0319
1952	82.3160	0.0359	126.5820	0.0352	25.3090	0.0281
1953	81.8900	0.0369	127.1440	0.0356	26.0250	0.0291
1954	82.3930	0.0361	126.4470	0.0354	26.0420	0.0289
1955	83.3120	0.0417	126.4340	0.0530	26.5420	0.0376
1956	82.2340	0.0666	128.0670	0.0418	26.5220	0.0415
1957	82.2880	0.0435	126.5710	0.0398	18.6260	0.0271
1959	86.4760	0.0658	127.2160	0.0710	47.7910	0.0890
1960	82.1480	0.0476	128.6070	0.0397	28.1760	0.0360
1961	83.8580	0.0397	126.4000	0.0507	28.2290	0.0383
1963	86.9120	0.0762	126.0460	0.0714	40.9180	0.0924
1964	86.9850	0.0416	125.5500	0.0442	32.2860	0.0398
1965	86.8660	0.0465	125.9800	0.0689	31.2180	0.0572
1966	86.8460	0.0403	126.0090	0.0597	28.1790	0.0436
1967	87.0120	0.0797	125.3330	0.0895	42.0990	0.1133
1969	86.1690	0.1033	127.9600	0.1218	51.7390	0.1816
1970	89.1570	0.0803	127.7570	0.0940	40.8530	0.1079
1971	89.6910	0.0815	127.4890	0.0974	42.1020	0.1157
1972	88.0440	0.0934	128.3960	0.1106	47.7730	0.1502
1973	87.3350	0.1032	128.8120	0.1233	51.6780	0.1815
1974	84.8090	0.0956	128.0800	0.1080	51.6630	0.1575
1977	82.2440	0.1012	126.2860	0.0794	9.5850	0.0305
1984	83.9140	0.0429	126.3910	0.0448	31.0770	0.0403
1985	83.6600	0.0468	126.0490	0.0457	32.3500	0.0439
1986	83.7410	0.0434	126.2350	0.0425	34.4850	0.0427
1987	83.7540	0.0645	126.2800	0.0561	40.9940	0.0722
1988	83.4140	0.0666	125.8330	0.0648	42.1730	0.0821
1989	84.4270	0.0766	127.3780	0.0750	47.8180	0.1054
1991	81.4640	0.0763	128.3400	0.0736	42.1650	0.0948
1992	85.7160	0.0858	129.6900	0.0936	55.4180	0.1323
1996	87.5090	0.0469	126.1130	0.0809	26.6050	0.0495
2003	89.6370	0.0888	132.4330	0.1276	18.5240	0.0581
2004	89.1580	0.0859	132.9340	0.1207	18.5430	0.0595
2005	89.6040	0.0561	132.4380	0.0756	26.0020	0.0440
2006	89.4810	0.0620	130.8850	0.0727	28.1190	0.0487
2008	89.3320	0.0567	127.7800	0.0660	34.4300	0.0582
2009	89.5570	0.0595	127.7080	0.0800	32.2960	0.0656
2010	89.0550	0.0587	127.9030	0.0780	31.3760	0.0624
2012	88.3820	0.0593	125.9400	0.0622	26.0700	0.0445
2013	88.9620	0.0620	126.3860	0.0655	26.0730	0.0455

2014	88.9740	0.0629	126.4210	0.0659	25.2710	0.0444
2015	88.4010	0.0547	125.9460	0.0462	25.2940	0.0332
2016	89.4560	0.0797	131.5360	0.0748	26.5410	0.0520
2017	89.4900	0.0796	130.8920	0.0863	31.2500	0.0711
2018	90.5290	6.2034	127.8520	0.4332	27.6030	2.6316
2019	88.8810	0.0642	127.3590	0.0657	26.6170	0.0459
2020	88.9210	0.1008	126.3460	0.0951	18.6500	0.0568
2021	88.3800	0.0701	125.8920	0.0568	18.6500	0.0327
2022	91.1710	0.0918	126.1260	0.0532	21.1420	0.0264
2023	90.1240	0.1142	125.4630	0.0653	9.6330	0.0143
2024	87.5640	0.5569	125.3020	0.3322	9.6160	0.0432
2026	81.8670	0.1520	126.8620	0.1238	9.5170	0.0315
2027	90.8060	0.0904	125.9530	0.0527	24.2030	0.0340
2028	90.6820	0.5658	122.2170	0.2579	24.3110	0.2177
2029	88.3710	0.1021	125.9100	0.0791	20.7270	0.0446
2030	90.8970	0.5910	122.4510	0.2717	9.5480	0.0440
5000	117.7840	0.0348	166.4720	0.0254	18.3590	0.0165
MAX		**8.2519**		**10.7038**		**4.2092**
MIN		**0.0301**		**0.0254**		**0.0143**
MEAN VALUE		**0.2350**		**0.2972**		**0.1310**

TIE POINTS						
POINT	**X**	**eX**	**Y**	**eY**	**Z**	**eZ**
61010101	82.1090	0.3084	129.9640	0.2780	15.3910	0.0676
61030101	82.9090	0.0411	133.2490	0.0208	28.4140	0.0248
62000001	119.0610	0.0280	117.5440	0.1001	9.7880	0.0476
62000002	116.0990	0.0530	117.3110	0.0623	9.7880	0.0316
62000003	121.1360	0.0411	160.1810	0.0608	8.8870	0.0244
62000004	122.1640	0.0341	160.4340	0.0609	12.2410	0.0264
62000005	121.4160	0.0432	152.7790	0.2329	12.0610	0.0340
62000008	121.9790	0.0312	145.7960	0.0448	20.1620	0.0257
62010101	113.8730	0.0296	120.1820	0.0445	13.6680	0.0159
62010102	113.3350	0.0299	122.0980	0.0558	16.3060	0.0220
62010103	113.5340	0.0325	124.1600	0.0566	9.6170	0.0196
62010401	117.6150	0.0462	160.6780	0.0330	8.9040	0.0142
62010402	117.2060	0.0512	161.6070	0.0295	11.0340	0.0114
62010403	117.5620	0.1535	165.5300	0.0358	16.1120	0.0873
62010404	117.1040	0.0490	160.4540	0.0308	12.7720	0.0163
62010405	117.0080	0.2017	160.6090	0.0664	16.4820	0.1195
62010406	117.5300	0.1048	165.4230	0.0255	13.1090	0.0297
62010407	117.3400	0.0996	163.3410	0.0247	14.6330	0.0414
62020101	113.2960	0.0204	121.5350	0.0358	22.6710	0.0183
62020102	114.2500	0.0223	131.5540	0.0357	22.6070	0.0191
62020103	113.5620	0.1338	120.5140	0.4534	23.7260	0.1462
62020201	114.6570	0.0243	135.3010	0.0436	19.2390	0.0174
62020301	116.7250	0.0344	155.9020	0.0319	25.9250	0.0195
62020302	116.6840	0.0386	155.8910	0.0326	20.0280	0.0169
62020303	116.1670	0.0324	150.4470	0.0343	21.3680	0.0170

62020304	116.0030	0.0309	148.6290	0.0331	24.9060	0.0184
62020305	116.1310	0.0318	150.4390	0.0325	24.9360	0.0181
62020306	117.2530	0.0391	154.5320	0.0359	19.9630	0.0186
62020307	116.6770	0.0357	155.9160	0.0317	24.8140	0.0192
62020402	112.3120	0.0519	161.0640	0.0290	22.3280	0.0186
62020403	112.3950	0.0585	163.5860	0.0330	20.7460	0.0184
62020404	112.5180	0.0378	163.5930	0.0250	25.9400	0.0185
62030101	113.8760	0.0227	117.9400	0.0339	28.0020	0.0254
62030301	111.2870	0.0524	152.4780	0.0296	32.5320	0.0370
62030302	108.0650	0.0594	155.8920	0.0274	31.8070	0.0371
62030303	109.7270	0.0396	153.8120	0.0296	30.9540	0.0253
62030304	109.0570	0.0399	154.6660	0.0298	30.9500	0.0254
62030305	108.2450	0.6913	145.5940	0.0478	31.3690	0.3983
63000001	136.1430	3.7264	142.0650	7.7939	22.8580	0.7832
63000002	103.7750	0.0448	170.1530	0.0304	14.6660	0.0211
63000003	98.2160	0.0724	169.2350	0.0447	8.0310	0.0451
63000004	98.8440	0.0861	170.5560	0.0359	8.0030	0.0471
63000005	105.7500	0.2217	172.9130	0.0451	13.9480	0.0883
63000006	105.1040	0.2647	171.7890	0.0402	7.9570	0.0525
63010101	112.0590	0.1085	167.0690	0.0459	14.0550	0.0498
63010201	106.9120	0.0420	167.6730	0.0337	16.6290	0.0207
63010202	105.9970	0.0433	167.7580	0.0340	16.5550	0.0219
63010203	102.7650	0.0398	168.0880	0.0340	16.0540	0.0201
63010204	107.0590	0.0607	167.6070	0.0354	14.9140	0.0371
63010205	112.5710	0.1906	167.2400	0.0820	9.4540	0.0304
63010206	112.0060	0.1415	167.0410	0.0622	11.4060	0.0318
63010301	99.9040	0.0388	168.3770	0.0344	14.5840	0.0209
63010302	99.1980	0.0388	168.4690	0.0327	13.0240	0.0191
63010401	93.6760	0.0409	168.7760	0.0284	10.3520	0.0149
63010402	93.6970	0.0373	168.8010	0.0253	16.1790	0.0146
63010501	88.9290	0.0377	169.2250	0.0279	10.3820	0.0134
63020101	114.3800	0.0753	166.8950	0.0316	16.9200	0.0409
63020102	115.0860	0.0742	166.8300	0.0313	16.9070	0.0404
63020201	99.7360	0.0394	164.8550	0.0333	20.4830	0.0180
63030201	105.9380	0.0376	156.2760	0.0295	30.9890	0.0232
63030202	102.7530	0.0347	157.0100	0.0250	32.8210	0.0205
64000001	82.9510	0.0376	165.5770	0.0521	12.6970	0.0137
64000002	81.3250	0.0418	146.9270	0.0236	14.2320	0.0218
64000004	71.5780	0.0740	99.4460	0.7861	23.7830	0.1132
64000005	79.2460	0.0663	91.0650	0.9767	18.3740	0.0804
64000006	77.4240	0.4067	147.7460	0.1199	8.9850	0.0556
64000007	65.2450	0.0478	118.9470	0.0996	13.7610	0.0477
64000008	76.2950	0.1570	116.1720	0.0622	10.4730	0.0239
64010101	86.1690	0.0508	167.9240	0.0587	10.3750	0.0144
64010201	84.9580	0.0324	156.0020	0.0248	11.9890	0.0152
64020101	119.8640	0.1024	124.8930	0.0670	39.0280	0.0701
64020201	86.1480	0.1407	167.9100	0.2041	16.1980	0.0185
64030401	87.2910	0.0435	145.6060	0.0200	22.0990	0.0193

64030501	92.5710	0.1149	140.0220	0.0435	24.2400	0.0443
64040301	98.8290	0.0322	153.7310	0.0220	32.8860	0.0184
65030101	84.3030	0.0256	126.4800	0.0574	31.0160	0.0422
65030102	88.4060	0.0359	126.3780	0.0376	28.4560	0.0330
65040101	84.7900	0.1004	126.2800	0.1376	40.8750	0.1457
65040102	86.9500	0.0252	125.7440	0.0329	34.3680	0.0281
65040103	86.9860	0.0389	125.3810	0.0505	42.3140	0.0583
65040104	86.0350	0.1018	128.0840	0.1269	51.5590	0.1720
66000001	100.1500	0.0230	105.9180	0.1028	14.1730	0.0438
66010101	92.9060	0.0198	119.7640	0.0262	18.3590	0.0154
66010102	96.8630	0.0265	115.3860	0.0406	10.1170	0.0156
66010301	109.3380	0.0162	117.7010	0.0256	18.3750	0.0141
66010302	107.1260	0.0190	114.4810	0.0275	10.1690	0.0140
66020101	92.0230	0.0189	119.5130	0.0246	24.9030	0.0196
66020201	101.4120	0.0187	117.2760	0.0333	25.4120	0.0267
66020301	111.2500	0.0170	117.6870	0.0275	25.0140	0.0210
67030101	86.3160	0.0453	133.2440	0.1796	28.6510	0.0566
67030102	89.1520	0.0335	131.2870	0.1172	30.8940	0.0514
67040101	85.0580	0.0371	131.9580	0.1411	47.0230	0.0900
MAX		**3.7264**		**7.7939**		**0.7832**
MIN		**0.0162**		**0.0200**		**0.0114**
MEAN VALUE		**0.1122**		**0.1599**		**0.0486**

CAMERA POSSITIONS						
POINT	**X**	**eX**	**Y**	**eY**	**Z**	**eZ**
90000006	76.1920	0.0455	180.5870	0.0323	9.3700	0.0212
90000007	76.2720	0.0455	180.7110	0.0325	9.3850	0.0212
90000008	77.4740	0.0444	181.5500	0.0336	9.3080	0.0200
90000009	66.2340	0.0437	150.5870	0.0380	10.4610	0.0258
90000010	66.4490	0.0513	151.4650	0.0394	10.4490	0.0265
90000011	63.7160	0.0394	114.0660	0.0399	11.0080	0.0390
90000012	63.9910	0.0420	112.6850	0.0388	11.0560	0.0331
90000017	99.0760	0.0344	98.8040	0.0383	11.5370	0.0304
90000018	100.6930	0.0345	98.8460	0.0388	11.5710	0.0305
90000019	100.6310	0.0337	98.9310	0.0339	11.5200	0.0307
90000020	99.0920	0.0336	98.9070	0.0335	11.4930	0.0313
90000022	120.2770	0.0588	98.7110	0.0551	11.7970	0.0545
90000024	121.7460	0.0610	98.6630	0.0581	11.8120	0.0567
90000025	119.6920	0.0296	114.2000	0.0403	11.4880	0.0222
90000026	119.0870	0.0288	113.3590	0.0410	11.4810	0.0213
90000027	123.6110	0.0373	164.2070	0.0275	10.3450	0.0193
90000028	122.8540	0.0367	165.3400	0.0290	10.3330	0.0169
90000031	120.5610	0.1098	143.1240	0.1090	16.4050	0.0631
90000032	120.5150	0.1069	142.1530	0.0965	16.4510	0.0604
90000033	127.6350	0.0375	158.8460	0.0596	19.9960	0.0307
90000034	127.8250	0.0394	160.4260	0.0603	19.9790	0.0304
90000035	128.6210	0.0573	146.9660	0.0616	19.7540	0.0364
90000036	128.3860	0.0627	145.7010	0.0582	19.7210	0.0364

90000037	124.4760	0.0439	159.5240	0.0395	19.9910	0.0370
90000038	123.1900	0.0419	159.7960	0.0393	20.0120	0.0333
90000054	94.1990	0.0521	170.8270	0.0410	9.5940	0.0341
90000055	94.4420	0.0512	171.9950	0.0463	9.5410	0.0359
90000056	105.1950	0.1011	205.4060	0.0702	16.4720	0.0686
90000057	106.5110	0.0994	205.1830	0.0698	16.5880	0.0646
90000058	96.1810	0.0756	197.7610	0.0557	16.4170	0.0443
90000059	99.2020	0.0769	197.5990	0.0572	16.4330	0.0467
90000060	75.3660	0.0594	179.2640	0.0400	20.2560	0.0414
90000061	76.7190	0.0504	184.4090	0.0401	20.2400	0.0281
90000062	76.5980	0.0443	180.4700	0.0333	16.3020	0.0184
90000063	77.1420	0.0469	183.7200	0.0394	16.5520	0.0206
90000066	120.6900	0.0374	100.4820	0.0380	11.7870	0.0318
90000067	118.8270	0.0384	98.7970	0.0387	11.8390	0.0341
90000068	56.4160	0.0492	104.4520	0.0556	11.2910	0.0502
90000069	54.6750	0.0502	107.7450	0.0570	11.2530	0.0529
90001001	63.2370	0.1568	144.4640	0.0709	18.1760	0.0624
90001002	60.1240	0.2586	147.3990	0.1983	18.1820	0.1744
90001003	60.4620	0.1694	147.1000	0.0611	18.0100	0.0701
90001004	58.9990	0.3780	133.5040	0.3082	17.8310	0.1734
90001005	58.9060	0.1706	133.6440	0.2722	18.2530	0.1700
90001006	59.0050	0.1518	133.5500	0.3348	18.4020	0.1600
90001014	58.3610	0.1497	152.0000	0.0552	10.0340	0.0825
90001059	82.5780	0.1792	98.3500	0.1492	10.8390	0.1469
90001060	82.9980	0.1635	98.4180	0.1486	11.1390	0.1282
90002004	89.3330	0.2964	157.0010	0.3400	17.9330	0.1777
90002005	89.2760	0.2828	156.4920	0.2304	17.9680	0.2129
90002006	89.4160	0.5078	156.7140	0.2364	18.2240	0.6398
90003004	82.2200	0.2924	103.3660	0.3441	17.8780	0.1675
90003005	81.8670	0.2873	103.2220	0.2380	18.2440	0.2173
90003006	81.6970	0.5377	103.1640	0.2825	18.1700	0.5685
90004004	112.3980	0.3251	126.0830	0.3675	17.8860	0.1782
90004005	112.6410	0.3034	126.3760	0.3950	18.3870	0.2550
90004006	112.4320	0.4024	126.2070	0.7613	18.0860	0.7698
90005001	102.0100	0.0560	170.7760	0.0479	9.5990	0.0268
90005002	108.7340	0.0982	169.3980	0.0427	9.7770	0.0459
90005003	122.8420	0.0365	165.4380	0.0291	10.4800	0.0158
90005004	126.1040	0.0406	163.5590	0.0399	10.4950	0.0218
90005005	124.8390	0.0461	165.2600	0.0612	10.4270	0.0493
90005006	128.1350	0.0427	164.1360	0.0457	10.4990	0.0262
90005007	128.0940	0.0443	163.6540	0.0586	10.5100	0.0323
90007002	75.2360	0.5047	116.9300	0.4581	17.9890	0.3864
90008002	107.5040	0.6939	105.4890	0.4806	17.8750	0.4476
90009002	139.0730	0.5106	121.1030	0.5204	17.7940	0.4367
90010002	149.9390	0.3433	154.5650	0.4075	18.3440	0.3702
MAX		**0.6939**		**0.7613**		**0.7698**
MIN		**0.0288**		**0.0275**		**0.0158**
MEAN VALUE		**0.1391**		**0.1300**		**0.1120**

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