

Equine Animations

X-ray Nomenclature, "Hemispheric Model" word doc

Arcade: 100

Date: 27/11/2011

Introduction information: complete

Nomenclature: complete

Examples: complete

Incomplete info provided or still to come:

- Complete intra oral x-rays

Brown:

X-rays may not be provided at this stage but needs to be on the back end so we can add easily later.

Introduction

Equine Animations has developed "X-ray Nomenclature" to facilitate the understanding and expectation of radiographic images of the horse's head, particularly dentition. For ease of understanding and comprehension original x-ray terms such as "DV", "DV oblique", "VD oblique", etc have been used.

Equine Animations have included a new concept of x-ray nomenclature called "Hemispheric Nomenclature" in this program.

"Hemispheric Nomenclature" was developed by a group of equine surgeons from Germany who have also written a comprehensive book on the subject of Equine Dentistry.

The model was developed in an attempt to simplify the nomenclature & understanding of such for x-rays of the equine head.

For the purposes of understanding the "Hemispheric Nomenclature" model for equine x-rays a brief guide of adaptive rules and coordinates have been created below:

Longitude

- The longitude angle is measured from and in relation to the "Median Plane" of the skull or a plane parallel to it.
 - 0 degrees: the point adjacent to the 101, 201, 301 and 401
 - 180 degrees: the area below the occipital bone.
- 0-180 degrees longitude, i.e. around the equator (a plane that runs through the occlusal surfaces of the dental arcades simultaneously, i.e., incisors & cheek teeth) in either direction,

Latitude

- The latitude angle is measured in relation to the horizontal plane separating the skull into upper (+) and lower (-), i.e., a plane that runs through the occlusal surfaces of the dental arcades simultaneously, i.e., incisors & cheek teeth.
 - Latitude angles are measured in relation to this plane.
 - 0 degrees latitude (Equator): a plane that runs through the occlusal surfaces of the dental arcades simultaneously, i.e., incisors & cheek teeth
- +90 degrees latitude (North Pole): dorsal, i.e. above and perpendicular to the plane that runs through the occlusal surfaces of the dental arcades simultaneously, i.e., incisors & cheek teeth
- -90 degrees latitude (South Pole): ventral, i.e. below and perpendicular to the plane that runs through the occlusal surfaces of the dental arcades simultaneously, i.e., incisors & cheek teeth.

Due to the length and width of the horse's skull and individual placement and angulations of the teeth it is necessary to allow each tooth to have its own axis while maintaining continuity of measurements. The individual axis of each tooth is the occlusal surface of the tooth.

Following is the order of nomenclature as pertaining to a single x-ray.

1. The tooth to be x-rayed will be listed as a "triadan" number, i.e. 109 (upper right 1st molar), this is followed by the ":"
2. Longitude, 0-180 degrees is the second number to be listed.
 - 0 is the area adjacent to the 501/101, 601/201, 701/301 & 801/401.
 - 180 is the area ventral to the occipital bone & outside the body.Any number in between 0 and 180 indicates the degree the generator is pointed in a rostral caudal direction or a caudal rostral direction measured from the "Median Plane" or a plane parallel to it.
3. + or - signs indicate the direction the generator is pointed in relation to dorsal/ventral or ventral dorsal.
 - + indicates a dorsal ventral direction (generator above the equator pointing down).

- - indicates a ventral dorsal direction (generator below the equator pointing up).
4. Latitude, 0 to 90 degrees is the third number to be listed.
 - 0 degrees has no dorsal-ventral or ventral dorsal angulations
 - 90 is either a direct dorsal-ventral or ventral-dorsal depending on the use of the + or – sign.

Any number in between pre emptied by the + or – sign indicates some form of oblique.
 5. Some abbreviations of words further indicating technique may follow, these are listed below.
 - IO: intra oral
 - MOC: mandible off center
 - OM: open mouth
 6. The x-ray plate is usually placed as close to the object been x-rayed as possible.

The “L” or “R” marker indicating left or right side of the horse should still be utilized on the x-ray plate.

Examples of “Hemispheric Nomenclature” in written form:

501: 0, +45 IO= 501 DV intra oral

106: 110, +30= 106 DV oblique

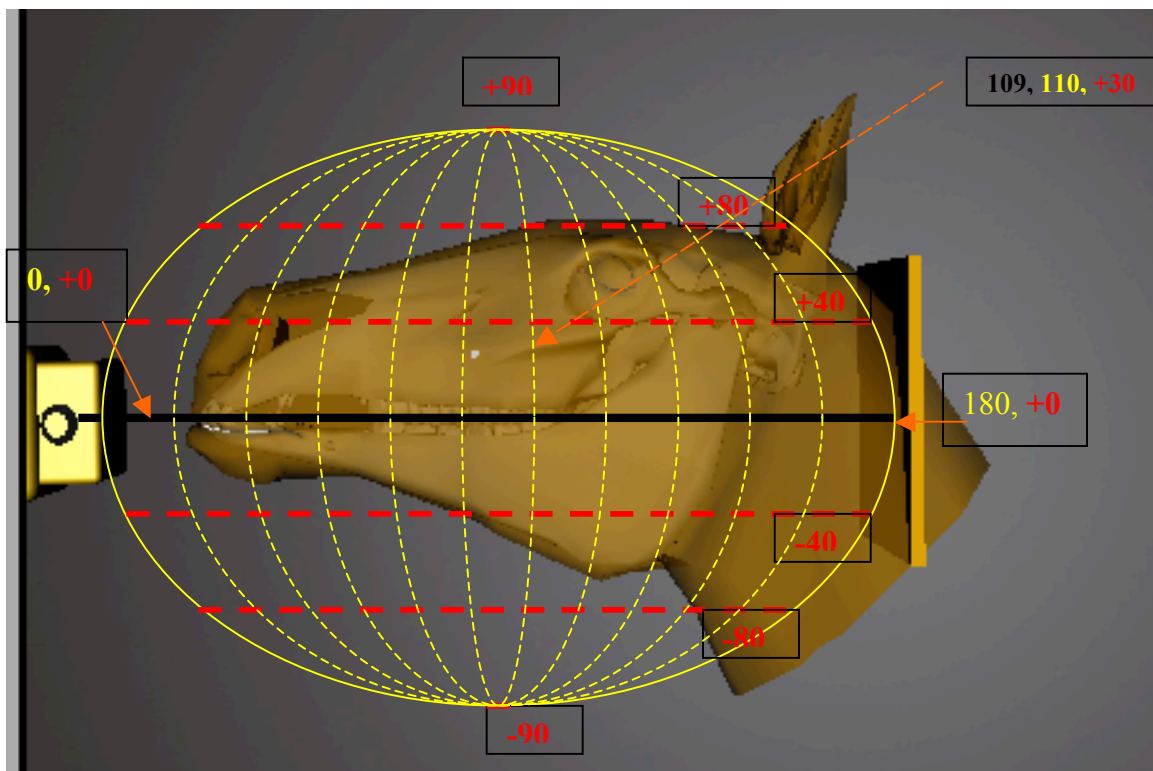
308: 100, -30= 308 VD oblique

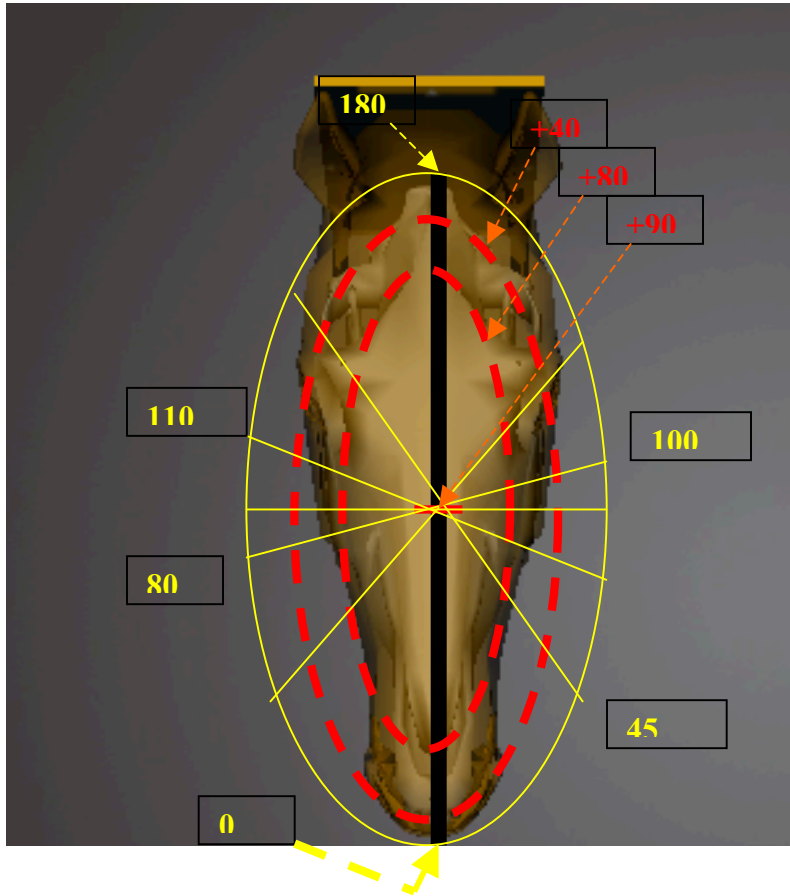
407: 110, +15, OM= 407 DV oblique open mouth

608: 90, +90, MOC= 608 DV Mandible Off Center

306: 75, -90, MOC= 306 VD Mandible Off Center

111: 110, +90, MOC= 111 DV Mandible Off Center





The “Hemispheric Nomenclature” model described here is relatively easy and logical to understand. It provides reasonably accurate placement and direction of the x-ray generator while taking radiographs of the equine head.

The lines provided on the above models are raw examples only. These lines should not be measured from or thought to be accurate.

The difference to recognize and understand between the true navigational coordinates used to navigate the world and the “Hemispheric Nomenclature” used to name x-rays of the equine head are:

1. Navigational coordinates:
 - a. + or – is listed first
 - b. Latitude is listed second
 - c. Longitude is listed third
 - d. East or west is listed fourth

Note: + or – 90 is always the north pole or south pole
2. Hemispheric Nomenclature
 - a. The tooth number is listed first utilizing the modified triadan nomenclature for teeth.
 - b. The longitude is listed second
 - c. + or – is listed third
 - d. The latitude is listed fourth
 - e. Some letters may be listed fifth to indicate a modified technique, i.e. IO (intra oral)

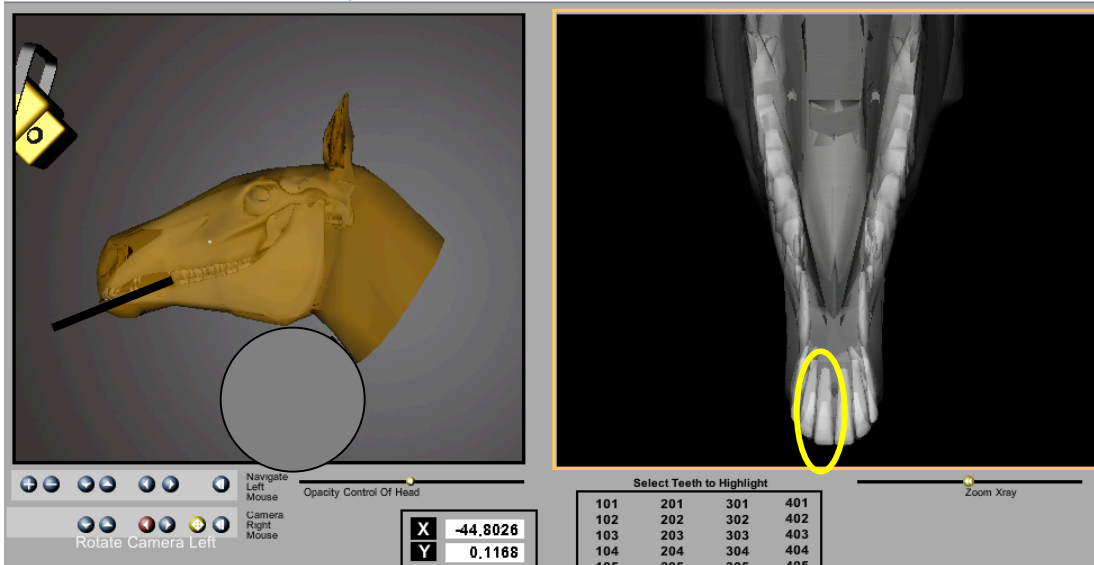
To save for any confusion the word form for all arcades are presented here. However for ease of presentation screen shots are only presented for the 100 and 300 arcades. It can be considered that the 200 arcade will mirror the 100 arcade and the 400 arcade will mirror the 300 arcade.

a. 100 arcade

i. DV Intra Oral 501/101- 502/102

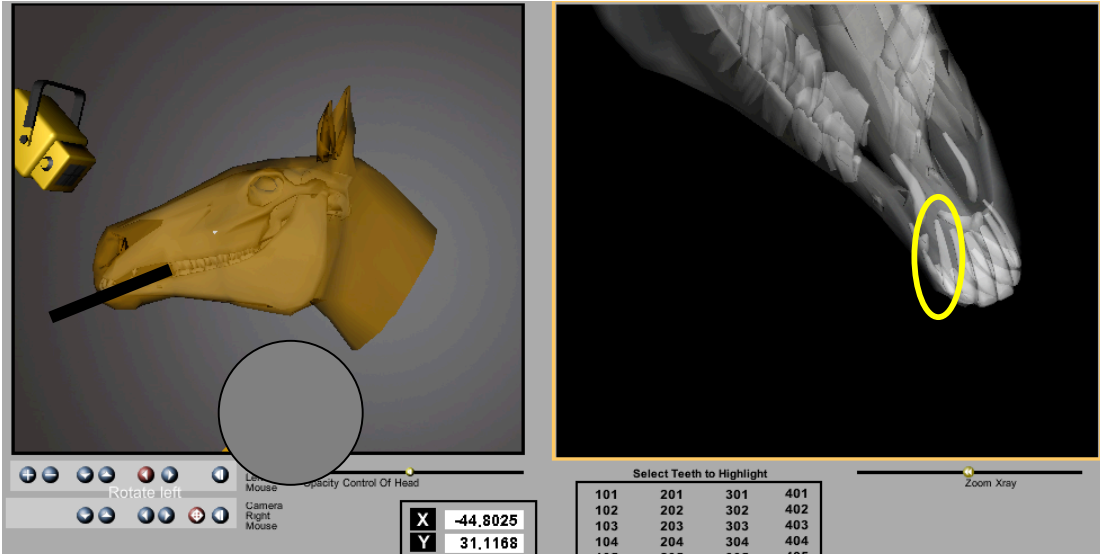
- 501/101- 502/102: 0, +45, IO

- Explanation



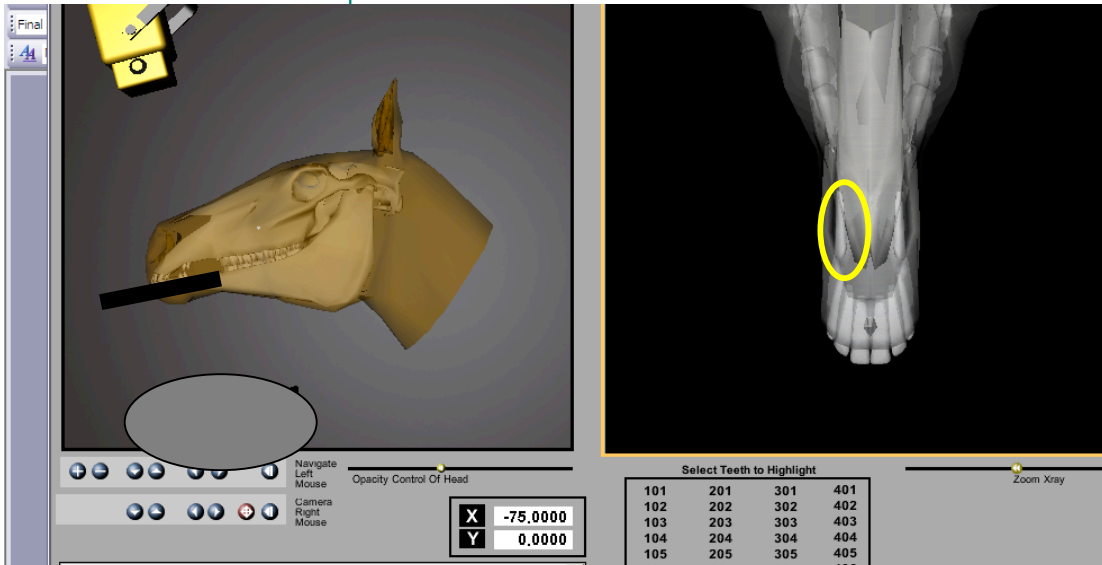
ii. DV Intra Oral 503/103

- 503/103: 30, +45, IO
- Explanation



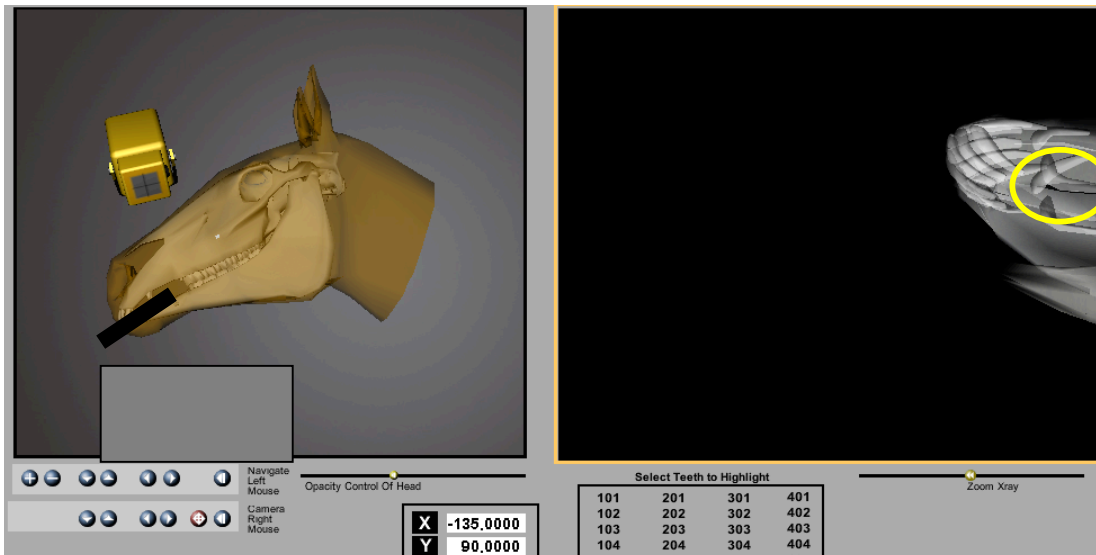
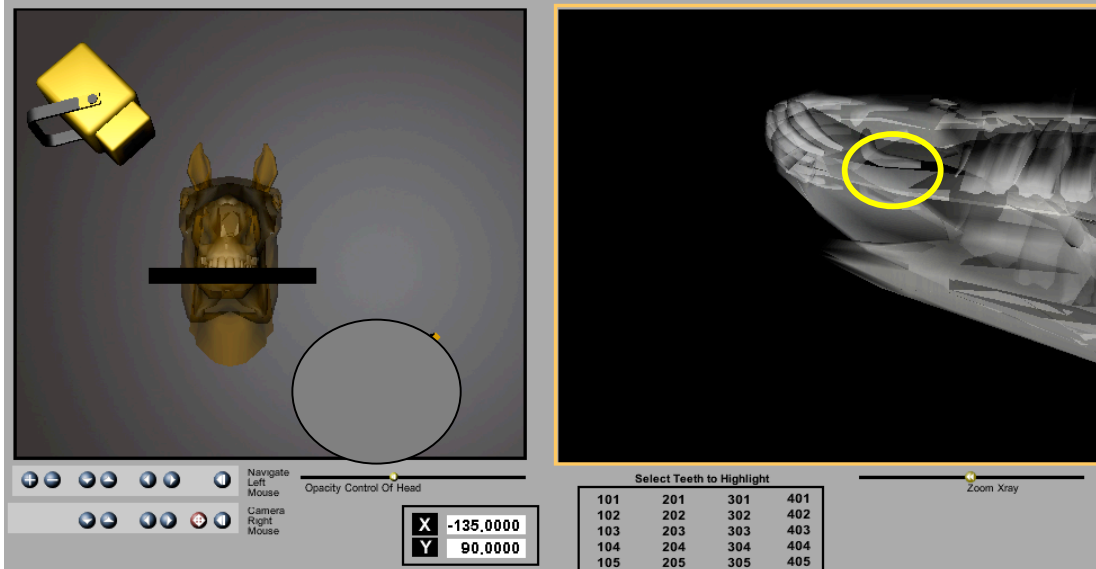
iii. DV Intra Oral 104

- 104: 0, +90, IO
- Explanation



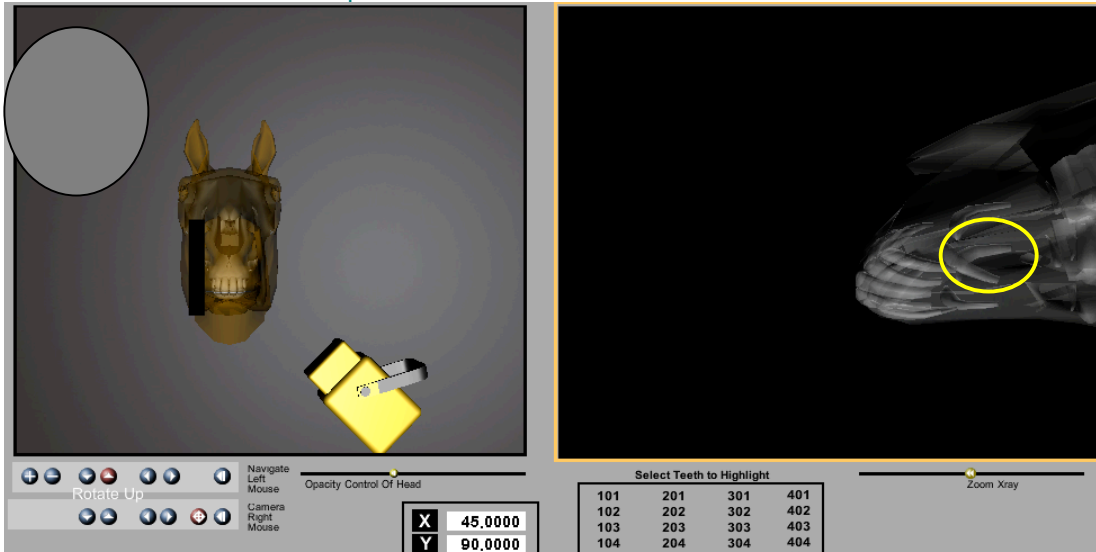
iv. DV Oblique Bisecting Angle Intra oral 104

- 104: 75, +45, IO
- Explanation



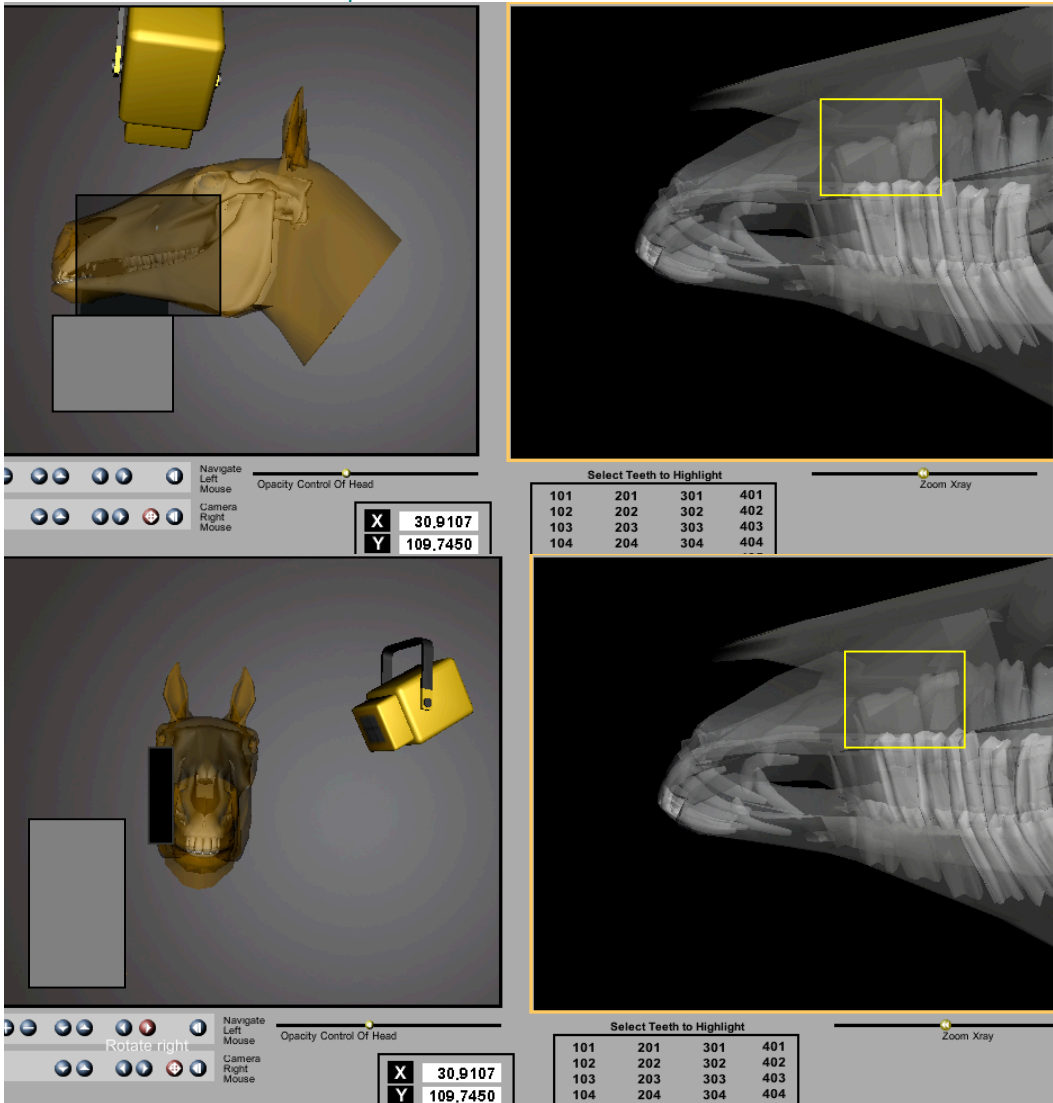
v. VD Oblique Open Mouth 104

- 104: 105, -45, OM
- Explanation



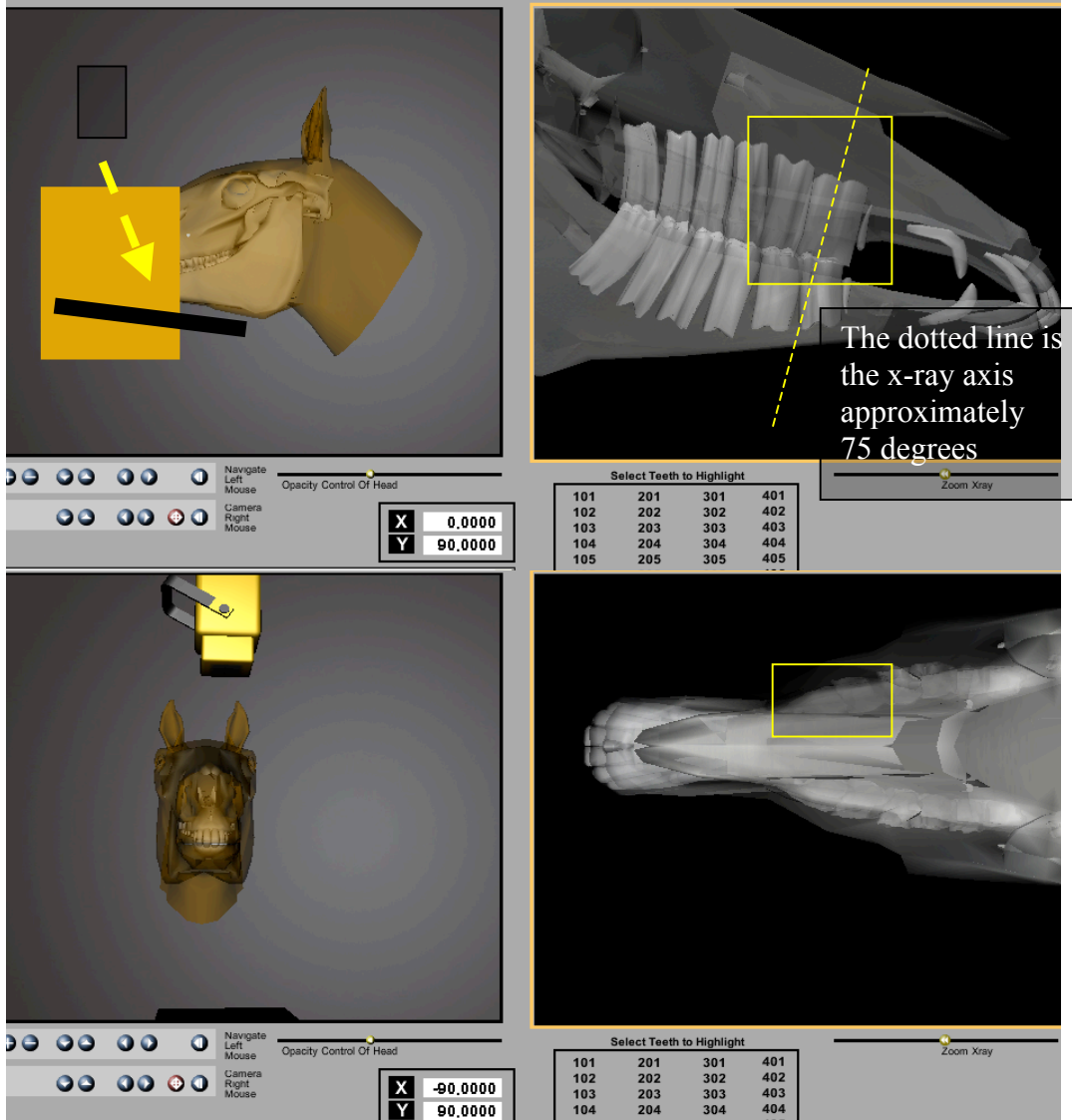
vi. DV Oblique 506/106- 507/107

- 506/106- 507/107: 110, +30
- Explanation



vii. DV Mandible Offset 506/106-507/107

- 506/106- 507/107: 80, +90, MOC
- Explanation

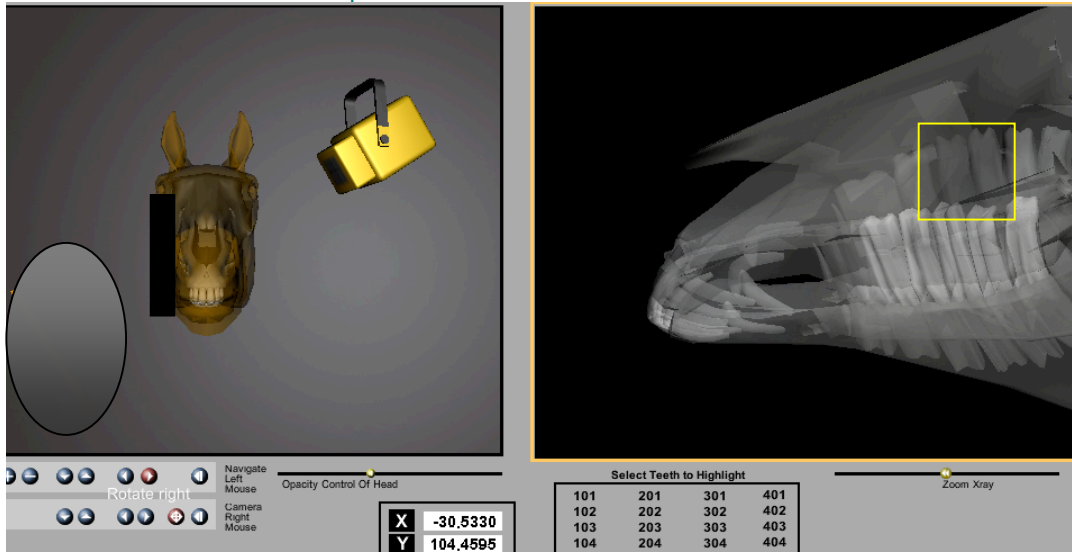


viii. DV Oblique Bisecting Angle Intra Oral 506/106-507/107

- 506/106- 507/107: 75,+45, IC
- Explanation

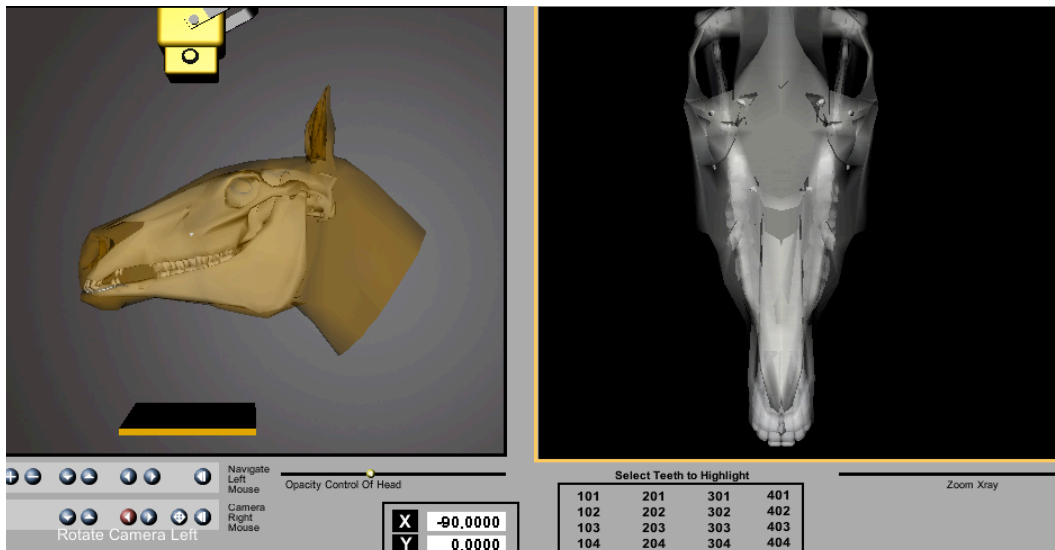
ix. DV Oblique 508/108-109

- 508/108- 109: 105, +30
- Explanation



x. DV Mandible Offset 508/108-109

- 508/108- 109: 0, +90, MOC
- Explanation

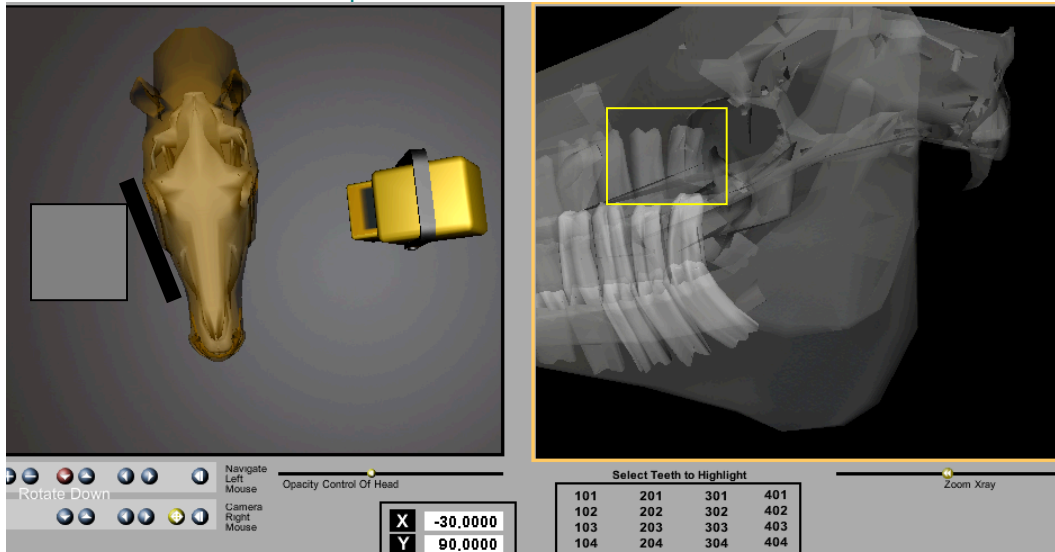


xi. Intra Oral 508/108-109

- 508/108- 109, 75, +45, IO
- Explanation

xii. DV Oblique 110-111

- 110-111: 90, +30
- Explanation

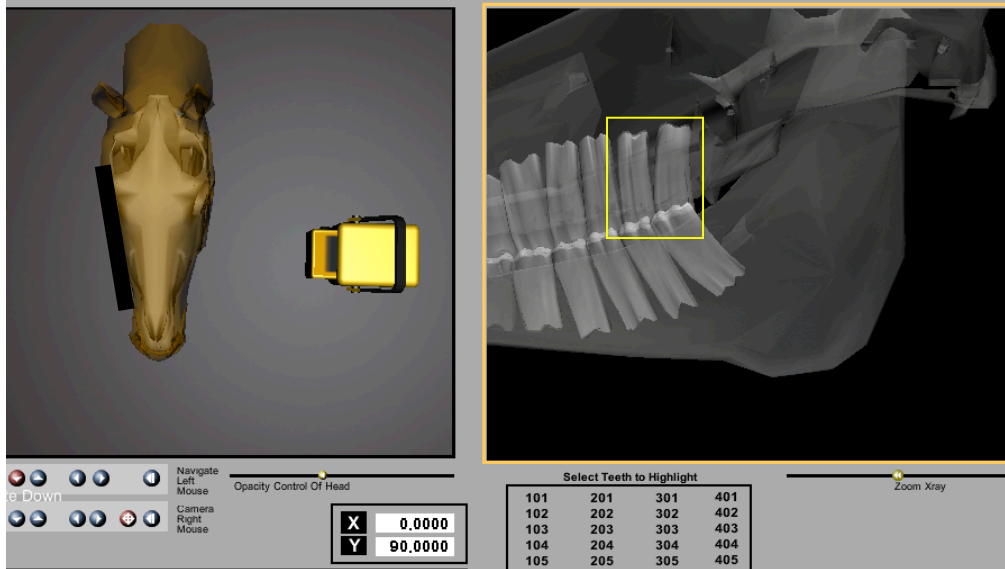


xiii. Intra Oral 110-111

- 110- 111, 90, +45, IO
- Explanation

xiv. Lateral 100 arcade

- 100 arcade: 90, +0
- Explanation



b. 200 arcade (the images of the 200 arcade should be a mirror image of 100 arcade)

i. DV Intra Oral 601/201- 602/202

- 601/201- 602/202: 0, +45, IO
- Explanation

ii. DV Intra Oral 603/203

- 603/203: 30, +45, IO
- Explanation

iii. DV Intra Oral 204

- 204: 0, +90, IO
- Explanation

iv. DV Oblique Bisecting Angle 204

- 204: 75, +45, IO
- Explanation

v. VD Oblique Open Mouth 204

- 204: 105, -45, OM
- Explanation

vi. DV Oblique 606/206- 607/207

- 606/206-607/207: 110, +30
- Explanation

vii. DV Mandible Offset 606/206- 607/207

- 606/206-607/207: 80, +90
- Explanation

viii. DV Oblique Bisecting Angle Intra Oral 606/206- 607/207

- 606/206-607/207: 75, +45, IO
- Explanation

ix. DV Oblique 608/208- 209

- 608/208- 209: 105, +30
- Explanation

x. DV Mandible Offset 608/208- 209

- 608/208- 209: 0, +90
- Explanation

xi. Intra Oral 608/208- 209

- 608/208- 209: 75, +45, IO
- Explanation

xii. DV Oblique 210-211

- 210-211: 90, +30
- Explanation

xiii. Intra Oral 210- 211

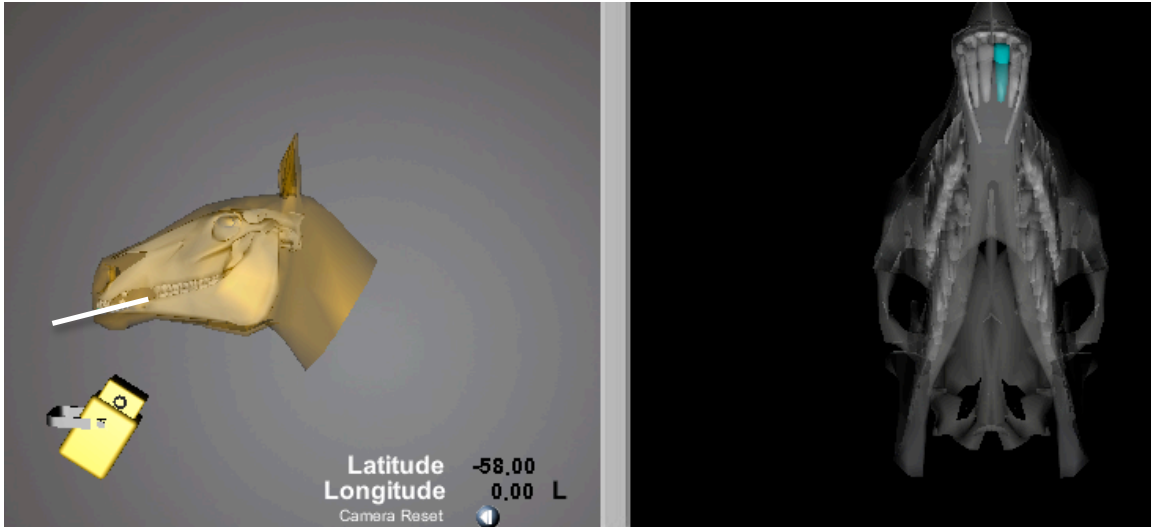
- 210- 211: 90, +45, IO
- Explanation

- xiv. Lateral 200 arcade
 - 200 arcade: 90, 0
 - Explanation

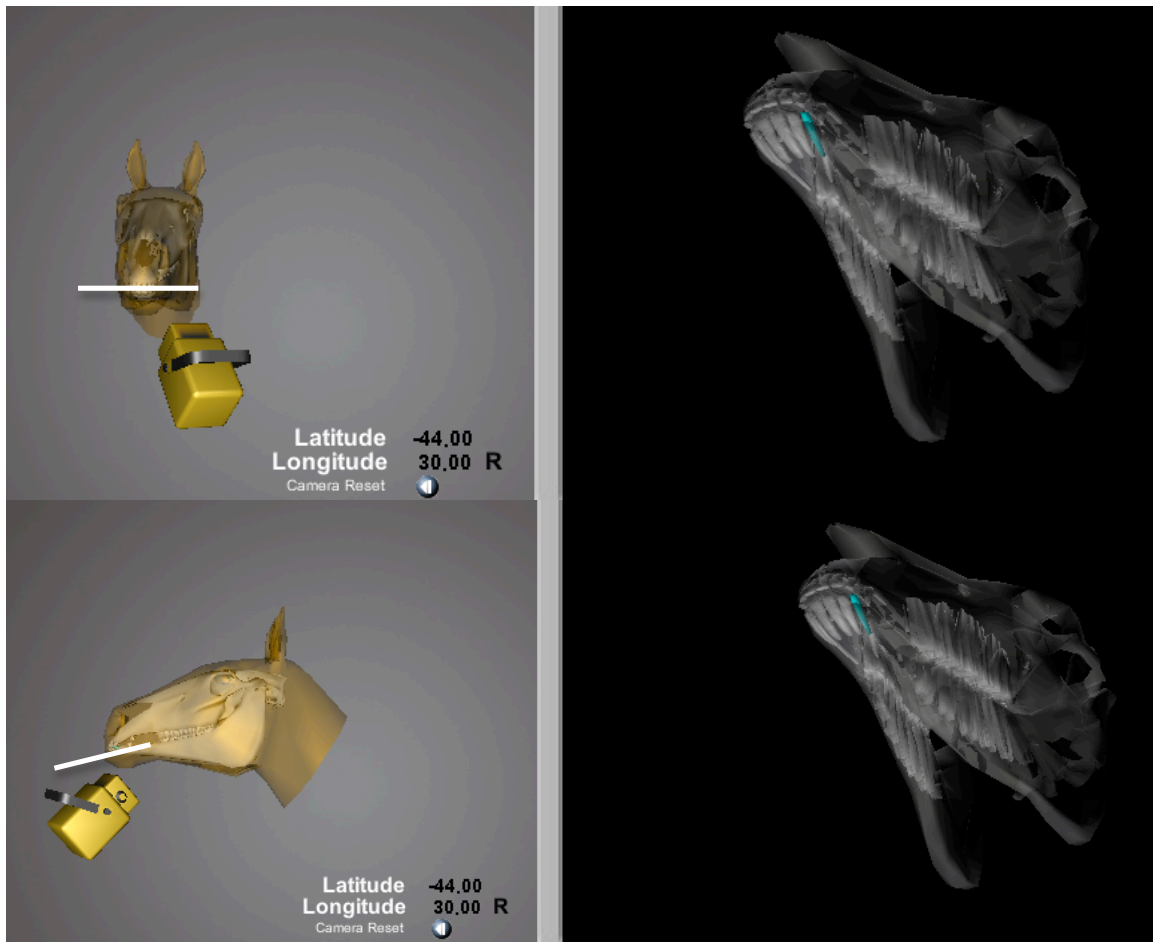
c. 300 arcade

i. VD Intra Oral 701/301- 702/302

- 701/301- 702/302: 0, -45, IO
- Explanation

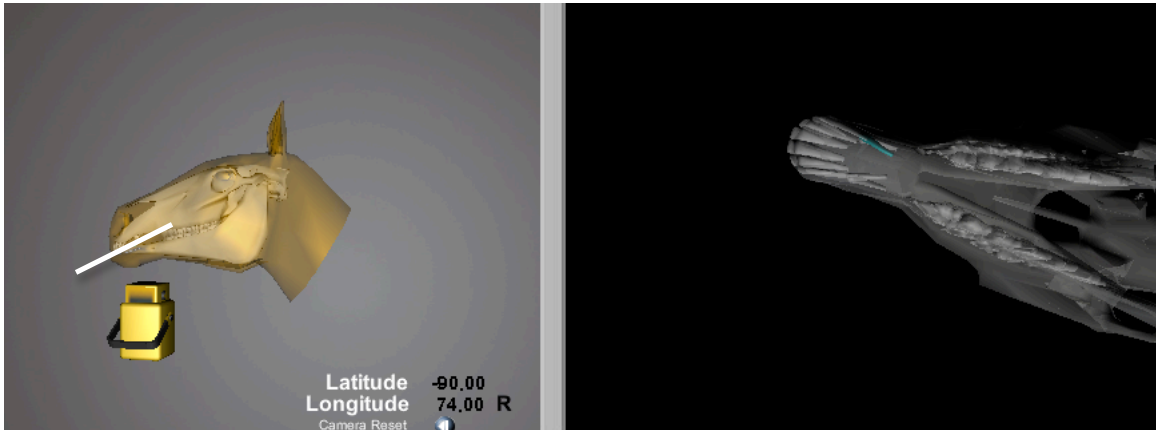


- ii. VD Intra Oral 703/303
- 703/303: 30, -45, IO
 - Explanation



iii. VD Intra Oral 304

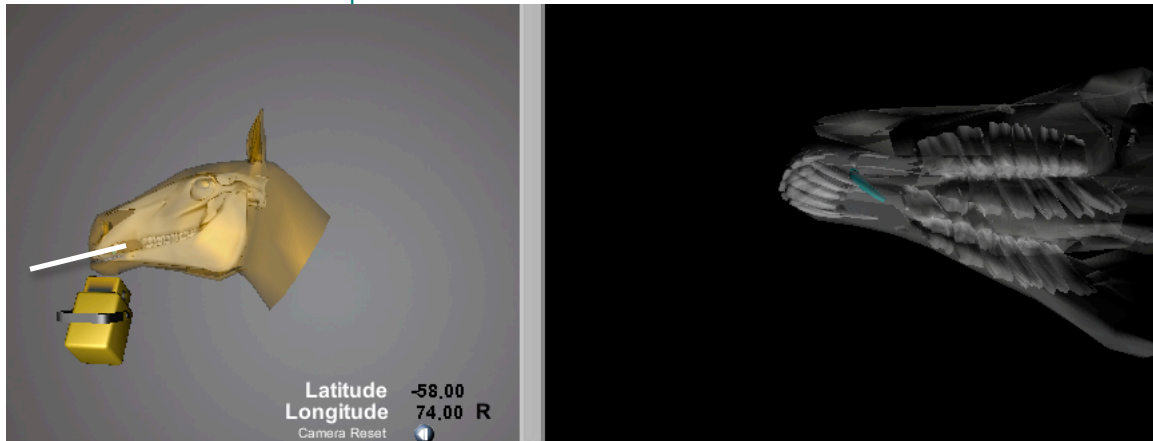
- 304: 0, -90, IO
- Explanation



iv. VD Oblique Bisecting Angle Intra Oral 304

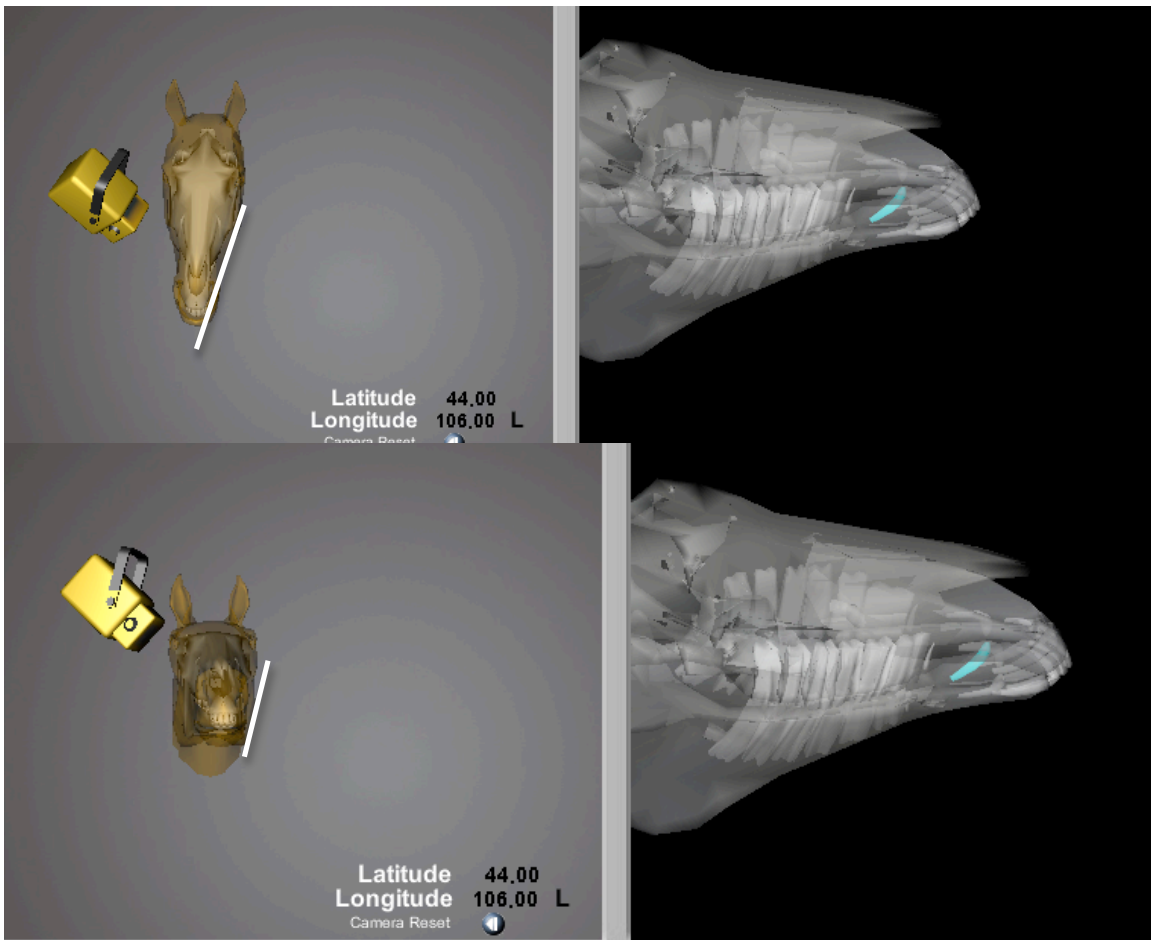
- 304: 75, -45, IO

- Explanation

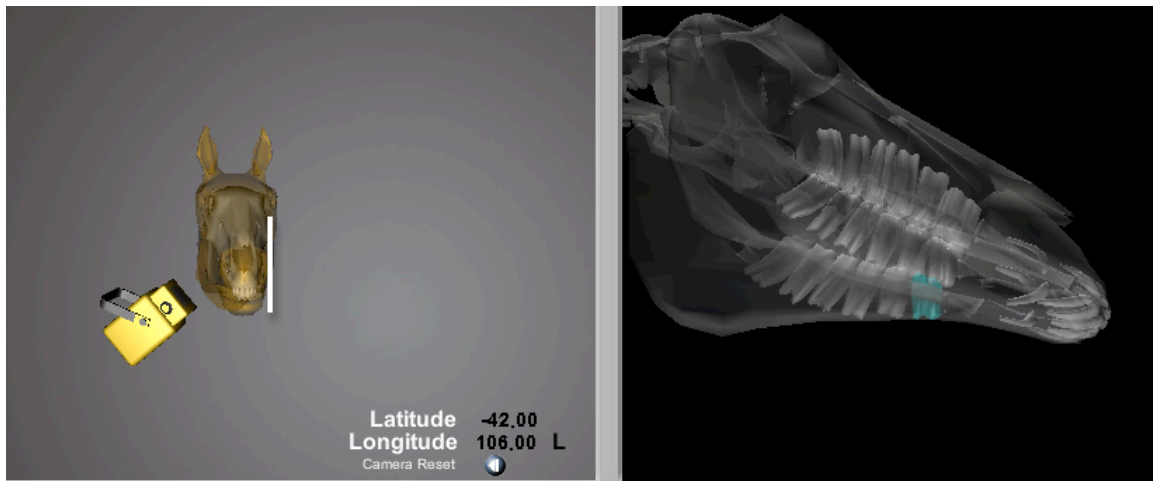


v. DV Oblique Open Mouth 304

- 304: 105, +45, OM
- Explanation

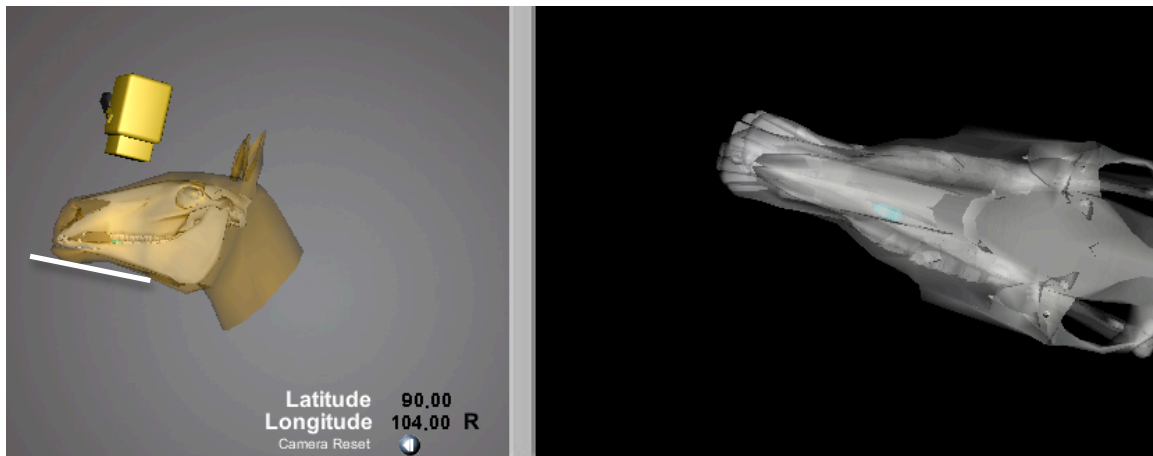


- vi. VD oblique 706/306- 707/307
- 706/306- 707/307: 110, -30
 - Explanation



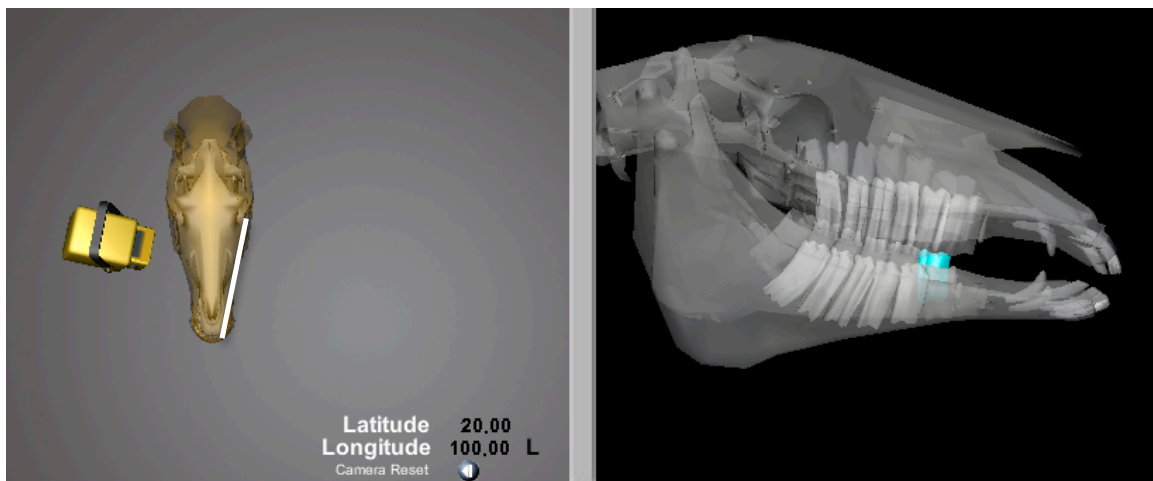
vii. DV Mandible Off Center 706/306-707/307

- 706/306- 707/307: 100, +90, MOC
- Explanation



viii. DV Oblique Open Mouth 706/306- 707/307

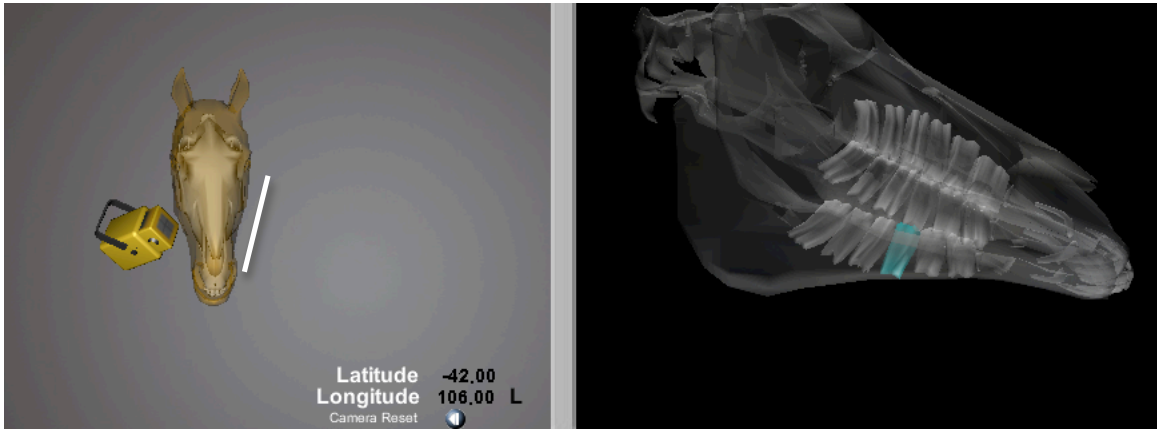
- 706/306- 707/307, OM, 100, 20
- Explanation



ix. VD Oblique Intra Oral 706/307-707/307

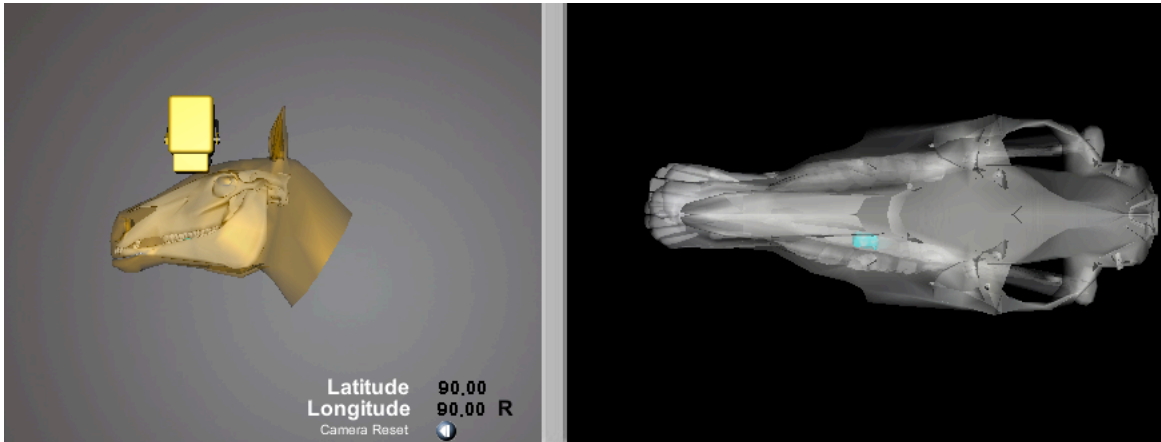
- 706/306- 707/307: 70,-45, IO
- Explanation

- x. VD Oblique 708/308-309
 - 708/308- 309: 105, -30
 - Explanation



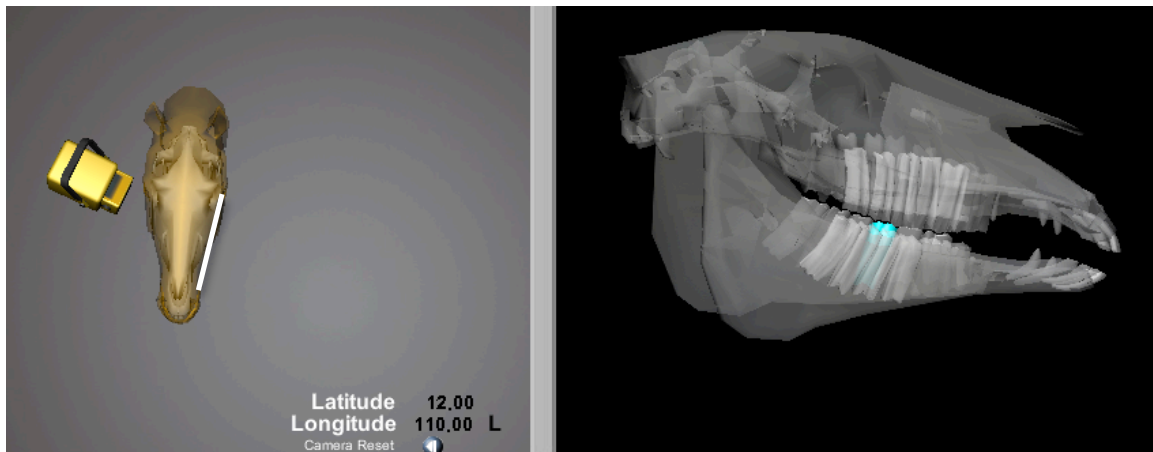
xi. DV Mandible Offset 708/308-309

- 708/308- 309: 0, +90, MOC
- Explanation



xii. DV Oblique Open Mouth 708/308- 309

- 708/308- 309: 105, 20, OM
- Explanation

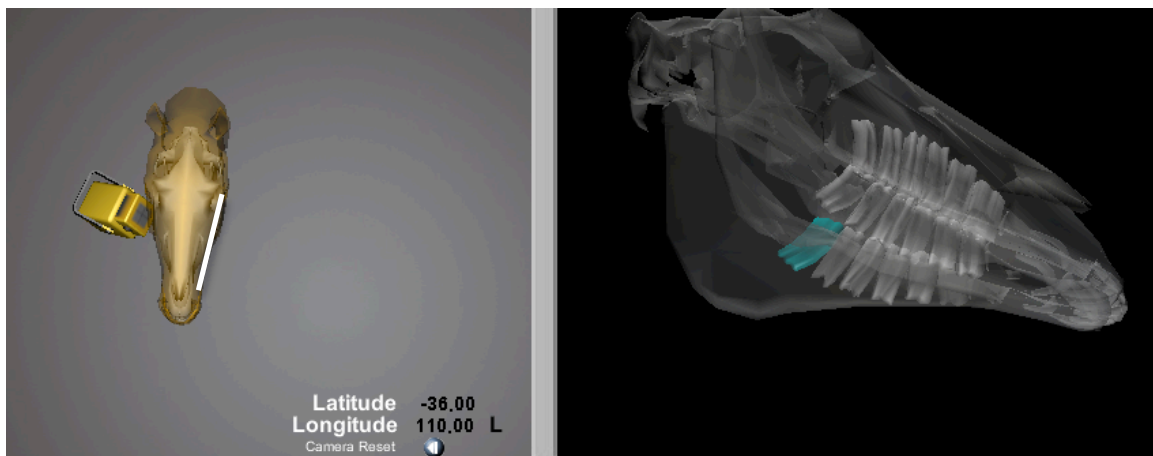


xiii. Intra Oral 708/308-309

- 708/308- 309: 75, -45, IO
- Explanation

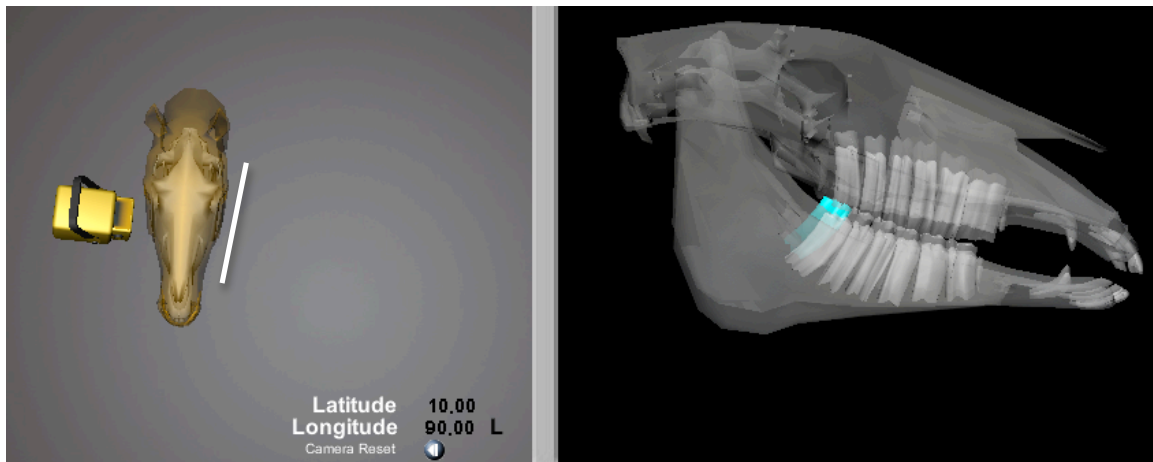
xiv. VD Oblique 310-311

- 310-311: 105, -20
- Explanation



xv. DV Open Mouth 311

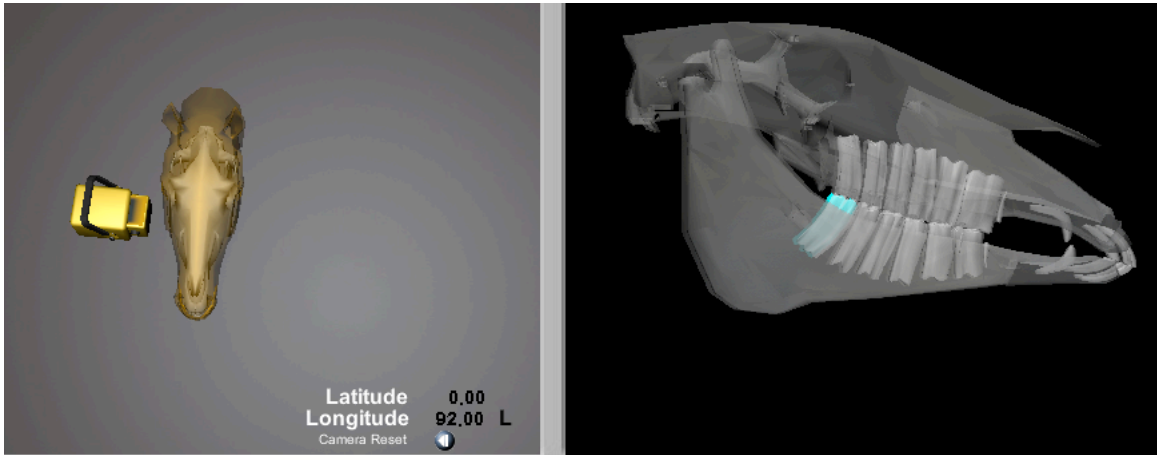
- 311: 105, 20 OM
- Explanation



xvi. Intra Oral 310-311

- 310- 311: -45, 90, IO
- Explanation

- xvii. Lateral 300 arcade
- 300 arcade: 90, 0
 - Explanation



d. 400 arcade (the images of the 400 arcade should be a mirror image of 300 arcade)

i. VD Intra Oral 801/401- 802/402

- 801/401- 802/402: 0, -45, IO
- Explanation

ii. VD Intra Oral 803/403

- 803/403: 30, -45, IO
- Explanation

iii. VD Intra Oral 404

- 404: 0, -90, IO
- Explanation

iv. VD Oblique Bisecting Angle Intra Oral 404

- 404: 75, -45, IO
- Explanation

v. DV Oblique Open Mouth 404

- 404: 105, +45, OM
- Explanation

vi. VD Oblique 806/406- 807/407

- 806/406- 807/407: 105, -30
- Explanation

vii. DV Mandible Off Center 806/406-807/407

- 806/406- 807/407: 100, +90, MOC
- Explanation

viii. DV Oblique Open Mouth 806/406- 807/407

- 806/406- 807/407: 105, +20, OM
- Explanation

ix. VD Oblique Intra Oral 806/406-807/407

- 806/406- 807/407: 75, -45, IO
- Explanation

x. VD Oblique 808/408-409

- 808/408- 409: 105, -30
- Explanation

xi. DV Mandible Offset 808/408-409

- 808/408- 409: 0, +90, MOC
- Explanation

xii. DV Oblique Open Mouth 808/408- 409

- 808/408- 409: 105, +20, OM
- Explanation

xiii. Intra Oral 808/408-409

- 808/408- 409: 75, -45, IO
- Explanation

xiv. VD Oblique 410-411

- 410-411: 90, -30
- Explanation

xv. DV Open Mouth 411

- 411: 90, +20, OM
- Explanation

xvi. Intra Oral 410-411

- 410-411: 90, -45, IO
- Explanation

xvii. Lateral 400 arcade

- 400 arcade: 90, 0
- Explanation

Bob you will notice in most cases we have tried to show where the x-ray plate should be. In cases you will notice the x-ray plate is away from the horse, this is not correct. The x-ray plate should be in contact with horses head for all shots except intra oral of coarse.

Note in some of the screen shots above we are unable to move the camera to a more realistic rostral position. I understand if it may not be practical to correct this issue, just let us know so we don't continue to raise it with you.

The example in the x-ray window (right window) of intra oral incisor & canine shots will not depict accurately what an actual x-ray will look like with the generator set at the angles shown on the screen and the plate in the intra oral position. To have this shown effectively the view may have to be ricocheted off a mirror that is lying on the occlusal plane of the incisors. I do not think this is necessary as the section that these pictures are pertinent to are only to give you a guide as to generator placement & x-ray plate placement then the x-rays Steve provided will be placed in the window on the right.

Model examples

Note the latitude number/measurement and or exact placement of generator is not accurate in all these models as 0 is not set at the appropriate place. See models below showing disparity of approximately 12-14 degrees. 0 latitude is to be on a plane that runs through the occlusal surfaces, i.e. incisors & cheek teeth simultaneously as shown in the second screen shot. This issue may be the cause of some of the confusion.

I have written the word document as accurately as I can guess the measurement to be. I apologize for the changes made is some of the nomenclatures Bob.

