



13-03

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Vacation Any and Top-Down Inclusion Award Enhancements

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Introduction

This PBS Notepad will cover the system and bid enhancements included in the 2Q 2013 version of the Navtech PBS system. The two major bid enhancements are the inclusion of the Vacation Any bid feature and the adoption of Top Down Inclusion award logic. Additional changes and features will be addressed at the end of this document. This is a lengthy document with a great deal of very important information covering a variety of PBS topics so please take the time to read and review.

Vacation Any

Beginning with bidding in July for the August 2013 bid period, a new bid feature is being introduced in Navtech PBS called Vacation Any. It is similar to the bid feature found in the former NWA bid system, but it has slightly different rules and limitations for its use.

Rules for Using Vacation Any

- Vacation Any is for *Pairings Bid Groups only*. The system will not let a pilot select the bid preference in a Reserve Bid Group
- Vacation Any is automatically placed at the top of a pairings bid group and cannot be moved below Award or Avoid Bids
- Vacation Any may be moved above or below other Set Condition Bids
- Vacation Any cannot be forgotten
- Vacation Any and Slide Vacation cannot be used in the same bid group
- Vacation Any may be used for in-period vacation days for vacations that either carry-in to or carry-out from the current bid month. Only the in-period days will be affected

How Vacation Any works

A Set Condition Vacation Any bid temporarily removes the vacation days from a pilot's calendar while PBS builds his schedule. PBS retains the value of the pre-awarded vacation credit and includes it in the line construction. Once the schedule is complete, it re-populates the calendar with the same number of vacation days the pilot started with. The days *may end up anywhere on the calendar* and subsequently affect the pilot's ability to use PCS after the awards are released. PBS will place the days back on the calendar using the following priority order:

- If available, the vacation is placed back in its original location
- If necessary, the vacation will be split but split into as few blocks of days as possible
- The PBS system will still show 'Honored' on the reasons report even if the vacation days are placed exactly back in their original position

If a bidder has more than one vacation week within a bid period, *all* vacation days from all vacation periods will be removed and subsequently replaced when using the Vacation Any bid preference.

Bidding for Vacation Any

The Vacation Any bid preference is found under the Set Condition bid tab:



Figure 1

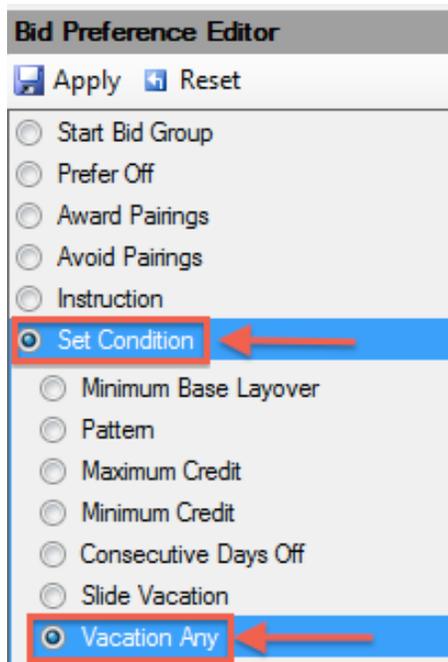


Figure 2

As was mentioned above, a pilot may not use Vacation Any and Slide Vacation in the same bid group. If a pilot attempts to add both bids to a pairings bid group, he will see the following error message on the PBS Web User Interface:

Error Adding Bid Preference

- This bid preference conflicts with an existing bid preference

Figure 3

On the PBS Desktop Application, the Apply button will simply be greyed out and the pilot will not be able to add the erroneous bid line.

Vacation Any Bid and Award Scenarios

Scenario 1: One week of vacation resulting in one block

Bidder has one PVAC week worth 22:45 from 09-15 June.

Result: Vacation Any is honored and places PVAC in one block, 02-08 June.

1. Start Pairings
2. Set Condition Vacation Any
PVAC 2013-06-02 00:00 2013-06-08 23:59 (022:45)
Honored
(1 Awarded, 1 Matching, Running total: 022:45)
3. Award Pairings If Departing On Jun 12, 2013 If Pairing Length = 4 days
4111 2013-06-12 17:45 2013-06-15 21:00 (021:30) (A)
(1 Awarded, 3 Matching, Running total: 044:15)
4. Award Pairings If Departing On Wednesday
4098 2013-06-19 14:59 2013-06-22 06:13 (018:04) (A)
4087 2013-06-26 14:45 2013-06-29 07:00 (019:40) (A)
Schedule is complete: 43
(2 Awarded, 45 Matching, Running total: 081:59)

Scenario 2: One week of vacation resulting in two blocks

Bidder has one PVAC week worth 22:45 from 09-15 June.

Result: Vacation Any is honored and places PVAC in two blocks, 06 June and 15-20 June.

1. Start Pairings
2. Set Condition Vacation Any
PVAC 2013-06-06 00:00 2013-06-06 23:59 (003:15)
PVAC 2013-06-15 00:00 2013-06-20 23:59 (019:30)
Honored
(2 Awarded, 2 Matching, Running total: 022:45)
3. Award Pairings If Departing On Monday, Wednesday, Friday If Pairing Length = 1 days
C603 2013-06-05 06:37 2013-06-05 17:00 (007:53) (A)
C610 2013-06-10 07:45 2013-06-10 18:16 (007:59) (A)
C282 2013-06-12 10:25 2013-06-12 17:49 (005:15) (A)
C610 2013-06-14 07:45 2013-06-14 18:16 (007:59) (A)
C610 2013-06-21 07:45 2013-06-21 18:16 (007:59) (A)
C610 2013-06-24 07:45 2013-06-24 18:16 (007:59) (A)
C610 2013-06-26 07:45 2013-06-26 18:16 (007:59) (A)
C610 2013-06-28 07:45 2013-06-28 18:16 (007:59) (A)

Schedule is complete: 43
(8 Awarded, 32 Matching, Running total: 083:47)

Scenario 3: In-period vacation and carry-out vacation

Bidder has two PVAC weeks from 23 June through 6 July. The in-period vacation days for the bid period are 23 June-1 July worth 29:15.

Result: Vacation Any is honored and places PVAC in two blocks, 02-09 June and 14 June. The portion of the PVAC in the next bid period is unchanged and remains at 02-06 July. It is noted on the Reasons Report but has no in-period credit for June.

1. Start Pairings

2. Set Condition Vacation Any

PVAC 2013-06-02 00:00 2013-06-09 23:59 (026:00)

PVAC 2013-06-14 00:00 2013-06-14 23:59 (003:15)

PVAC 2013-07-02 00:00 2013-07-06 23:59 (000:00)

Honored

(3 Awarded, 3 Matching, Running total: 029:15)

3. Award Pairings If Departing On Jun 28, 2013 If Pairing Length = 4 days

4115 2013-06-28 17:45 2013-07-01 07:00 (018:00) (A)

(1 Awarded, 6 Matching, Running total: 047:15)

4. Award Pairings If Departing On Monday, Thursday If Pairing Length = 1 days

C610 2013-06-10 07:45 2013-06-10 18:16 (007:59) (A)

C610 2013-06-13 07:45 2013-06-13 18:16 (007:59) (A)

C610 2013-06-20 07:45 2013-06-20 18:16 (007:59) (A)

C610 2013-06-24 07:45 2013-06-24 18:16 (007:59) (A)

C610 2013-06-27 07:45 2013-06-27 18:16 (007:59) (A)

Schedule is complete: 43

(5 Awarded, 20 Matching, Running total: 087:10)

Scenario 4: Two separate vacation weeks

Bidder has one PVAC week from 09-15 June and one SVAC week from 16-22 June worth 45:30.

Result: Vacation Any is honored and places PVAC in one block, 02-08 June, and SVAC in two blocks, 14-19 June and 28 June.

1. Start Pairings

2. Set Condition Vacation Any

PVAC 2013-06-02 00:00 2013-06-08 23:59 (022:45)

SVAC 2013-06-14 00:00 2013-06-19 23:59 (019:30)

SVAC 2013-06-28 00:00 2013-06-28 23:59 (003:15)

Honored

(3 Awarded, 3 Matching, Running total: 045:30)

3. Award Pairings If Departing On Monday, Thursday If Pairing Length = 1 days

C610 2013-06-10 07:45 2013-06-10 18:16 (007:59) (A)

C610 2013-06-13 07:45 2013-06-13 18:16 (007:59) (A)

C610 2013-06-20 07:45 2013-06-20 18:16 (007:59) (A)

C610 2013-06-24 07:45 2013-06-24 18:16 (007:59) (A)

C610 2013-06-27 07:45 2013-06-27 18:16 (007:59) (A)

Schedule is complete: 43

(5 Awarded, 20 Matching, Running total: 085:25)

Top Down Inclusion

There has been a significant improvement in the Denial Mode logic. The new logic is called "Top Down Inclusion."

The key to understanding Denial Mode is the concept of completion attempts. Completion attempts are simply automatic bid groups that operate behind the scenes. As always, PBS will run through preferences in a step-by-step manner. What has changed is what PBS will do if it cannot honor all of a pilot's restrictions - Prefer Off, Set Condition, and Avoid functions. This step of incrementally reducing restrictions is known as Denial Mode.

Instead of denying restrictions bottom to top and right to left, PBS will now consider restrictions from top to bottom and left to right. The result is that PBS will now consider lower restrictions even if it has to deny higher restrictions.

In general, pilots will notice that PBS has honored more restrictions than it was previously able to honor.

Detailed explanation

Old Logic

To understand what has changed, it's worth quickly reviewing the old logic. Previously, PBS worked from the bottom and progressively removed the lowest restriction with each new completion attempt until it was able to build a line.

Attempt 1	Attempt 2	Attempt 3	Attempt 4
Start Pairings	Start Pairings	Start Pairings	Start Pairings
Restriction 1	Restriction 1	Restriction 1	Restriction 1
Restriction 2	Restriction 2	Restriction 2	Restriction 2
Restriction 3	Restriction 3	Restriction 3	Restriction 3
Award Pairings	Award Pairings	Award Pairings	Award Pairings

While this method provided an incremental loosening of restrictions, PBS often denied lower restrictions that it might have been able to honor. Once a restriction was denied, it was not considered again. Thus, PBS may have to deny lower restrictions that it could have considered because a higher restriction had to be denied in order to complete the line. For example, Restrictions 2 and 3 may have been possible above, but Restriction 1 was not. During Attempt 4, Restrictions 2 and 3 were not even considered.

New Logic

PBS will still attempt a completion attempt to see if it can honor all of the restrictions. If it is possible to build a line at this stage, it is finished.

If PBS is unable to build a line that honors all restrictions, it will next attempt to build a line that ignores every restriction. This step is to determine if it is futile to attempt to honor any of the restrictions. If PBS is unable to build a line at this step, then it ignores the bid group.

If PBS is able to build a line while ignoring all of the preferences then it makes successive completion attempts for each restriction. At each completion attempt PBS attempts to build a line with the newly added restriction. If PBS is able to build a line, then it keeps the restriction for subsequent attempts. If PBS is unable to complete the line, PBS denies the restriction and moves to a new completion attempt with the next lower restriction. In doing this, PBS considers all of the combinations of restrictions.

Attempt 1
Start Pairings
Restriction 1
Restriction 2
Restriction 3
Award Pairings

If attempt 1 *does not* result in a line:

Attempt 2 (feasibility check)
Start Pairings
Award Pairings

If Attempt 2 results in a line then PBS will go through multiple attempts adding a restriction each time until all of the restrictions are attempted. If completion attempt 2 does not result in a line, then there is no point in continuing to add even more restrictions.

Attempt 3
Start Pairings
Restriction 1
Award Pairings

Attempt 4
Start Pairings
Restriction 1
consider if possible/ignore if impossible based on the results of completion attempt 3
Restriction 2
Award Pairings

Attempt 5
Start Pairings
Restriction 1 consider if possible/ignore if impossible based on the results of completion attempt 3
Restriction 2 consider if possible/ignore if impossible based on the results of completion attempt 4
Restriction 3
Award Pairings

If this final completion attempt results in a line, PBS will use it. If it does not result in a line, then it will use the line from the last completion attempt that resulted in a line.

Nuances:

Multiple bid groups

It is still possible to cut the process short by using a Clear Schedule and Start Next Bid Group (there is no Denial Mode in a bid group that ends with a CSSN) command or an Else Start Next Bid Group command. However, we only advise using one of these options if you want to change strategies in the next bid group. If you use multiple bid groups to simply create less restrictive bid groups then you should reconsider your bidding technique because this top down inclusion logic is much more effective.

Minimizing denied avoid preferences

This enhancement allows PBS to consider restrictions below a denied restriction. However, a denied restriction will still be ignored for all subsequent pairing awards. Pilots may still wish to employ a bidding strategy to minimize the award of pairings that violate a restriction just in case that restriction ends up being denied.

An example is "Avoid Pairings If Redeyes." If PBS is unable to honor the restriction, it might still be possible to be awarded a line with as few red eyes as possible by layering Award statements below the Avoid statement.

For example:

```

Start Pairings
Avoid Pairings If Redeye
Award Pairings If <good things> If Not Redeye
Award Pairings If <other good things> If Not Redeye
Award Pairings If Not Redeye
Award Pairings If <good things>

```

Award Pairings If <other good things>
Award Pairings

Dates in a Prefer Off are considered left to right

The new logic applies similarly to dates in a Prefer Off. They are now considered from left to right unless the Prefer Off has an All or Nothing or Else Start Next Bid Group. Where PBS would previously deny each date starting at the right and then moving left, it will now consider the first date from the left and then progressively consider each date to the right. *The improvement is that PBS will attempt to honor a date even if it was unable to honor a date to the left.*

Generally place restrictions above awards

While there are exceptions, it is still a good rule of thumb to place restrictions above awards. *PBS will not shuffle above a Prefer Off or Avoid that it can honor.* Shuffling is explained in more detail in the PBS Gouge, and is essentially a method that PBS uses only when necessary to clear a logjam created by the order of awarding pairings.

PBS will not remove a pairing awarded above a restriction if that restriction is honored since the idea of shuffling is to protect even higher restriction preferences. The problem is that if PBS needs to shuffle a pairing because that pairing is precluding a pilot from getting a line, it will have to deny any lower restrictions in order to remove the pairings in the shuffling process.

Miscellaneous Enhancements and Updates

Total In-Period Credit on the PBS Calendar

The PBS Calendar will now show the Total In-Period Credit for the current bid period. This value and the events can be cross-referenced with the Results Tab.

The screenshot shows a table titled 'Results For JUN 2013' with a sub-section 'Awards'. The table has columns for Award, Start, End, Position, Total Credit, and In-Period Credit. A red box highlights the 'Total In-Period Credit' value of 49:21 at the bottom of the table. A red arrow points from this value to the right.

Award	Start	End	Position	Total Credit	In-Period Credit
3426	2013/06/01 18:45	2013/06/04 15:24	A	21:00	15:21
44WD	2013/06/10 00:00	2013/06/12 23:59		11:15	11:15
PVAC	2013/06/23 00:00	2013/06/29 23:59		22:45	22:45

Total In-Period Credit: 49:21

Figure 4



Figure 5

Supported Web Browser for PBS

Beginning with this PBS software release, the Navtech system will now fully support Internet Explorer (IE) version 9 and Google Chrome version 26 for both Mac and PC. The support for Firefox has been discontinued. Pilots should pay attention to the warning message when logging into PBS:

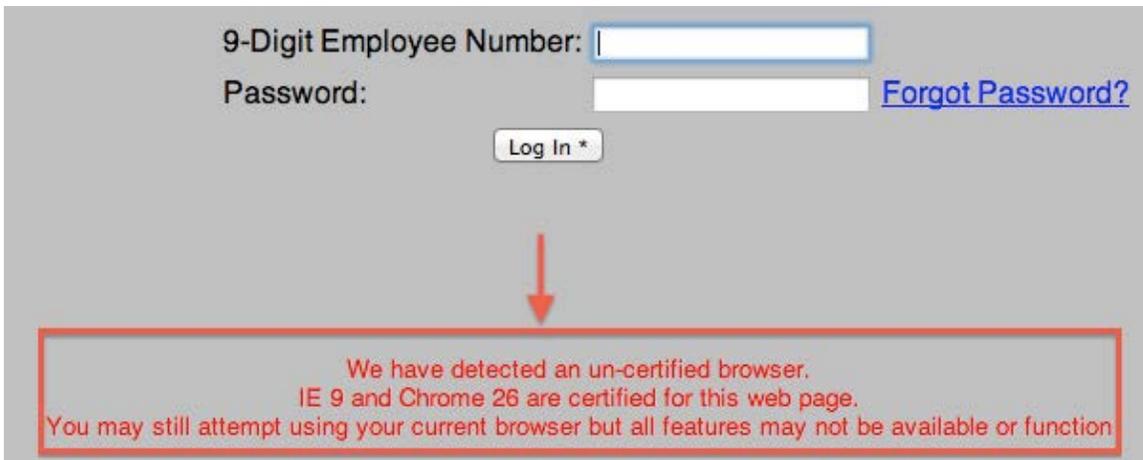


Figure 6

The most important thing to understand about this is that Navtech rigorously tests the supported and certified browsers listed above. *Pilots are not prevented in any way from using a non-certified version of a browser or an unsupported browser*, but it may lead to degraded or complete lack of functionality. For example, although not directly supported, the PBS Web UI works very well with Safari for both Mac and PC and on iPads. Navtech has no control or input when browser developers make changes to their browsers, nor can Navtech control when and how often these changes are made. As new versions are introduced, it requires a great deal of testing to assure proper

functionality. Although a popular browser, Firefox became unsupportable due to the number and types of changes Mozilla made to its code and due to conflicts with the web UI for PBS.