

## SKU (NIIN) Compatibility

### Software – Managing SKU (NIIN) Compatibility

**Problem:** The United States Navy had a functional requirement that specific hazard classes could not be stored in the same area due to incompatibilities between these various hazard classes.

SWMS was deployed to consider SKU (NIIN) compatibility while receiving (including inventory adjustments and cycle counts), putaway, move and loadout planning the product into storage locations. SKU (NIIN) compatibility is performed at the Zone level (which was configured to be at the Magazine (Hold/Level) and not to the location levels. The system suggested location could be overridden by the operator with a non SKU compatible location and in which case the operator was prompted with an RF (RF Terminal) or PB (PowerBuilder (GUI front end interface) message that he/she was violating the SKU (NIIN) compatibility requirement. The manually overridden transaction information is tracked by SWMS in history tables. SKU (NIIN) compatibility is driven by the hazard material class data of each product that is being stored on the ship. The following is the list of areas where SKU (NIIN) compatibility was considered:

- Receiving (PB and RF)
- Putaway (RF)
- Relocation (PB and RF)
- Cycle Counts (PB and RF)
- Inventory Adjustments (PB)
- Loadout Planning

#### Assumptions

1. SKU (NIIN) Compatibility needs to be checked only at the Zone level and not at the location level.
2. SKU (NIIN) Compatibility need not be considered by the system when storing product in Stage Locations. On the ship, the following were defined as stage locations: transfer deck (PRE-STAGE location), elevators, final stage locations (CONREP or VERTREP stations).

#### Notes

1. The inventory/tasks that are being considered for SKU (NIIN) Compatibility will include: all inventory contained in the zone, all tasks going to the zone and all planned tasks going to the zone.
2. There will be a Flag on the zone record to indicate if SKU (NIIN) compatibility should be checked.

### Additional Background Information

For the United States Navy, HK Systems modified their base Warehouse Management System (WMS) software to create a Shipboard Warehouse Management System (SWMS) for the new class of supply ship (T-AKE class).

The United States Navy uses the term NIIN when describing or referencing a SKU. A National Item Identification Number (NIIN) is a 9-digit numeric code which uniquely identifies an item of supply. The term NSN (National Stock Number) (a 13-digit numeric code) has also been used to describe a SKU.

**Solution:      Implement a new table structure to maintain all of the hazard classes and cross reference those with the other hazard classes and indicate whether the combination is compatible or incompatible.**

This solution was implemented using a new table structure to maintain all the available hazard material classes along with their related incompatible hazard material class information. Each time an operator performs a receipt, putaway, move or loadout plan a load to a storage location, the incoming hazard material class of the product will be compared to the existing product's hazard material class by using the SKU (NIIN) Compatibility table.

SWMS considers the product to have a SKU (NIIN) Compatibility issue if the product is being placed in a zone where incompatible product already exists. SWMS zones will be configured as follows. For hold locations an entire hold/deck will be configured to be one zone. For O1 Level locations, the entire Storeroom will be configured to be one zone (for example, The Fuses/Primers/Detonators Storeroom will be configured to be one zone). Note: SWMS will not check for SKU (NIIN) Compatibility issues on the transfer deck.

SWMS considers SKU (NIIN) Compatibility for loadout planning and putaway location selection. For loadout planning and putaway location selection, SWMS will not select a location within a zone where SKU (NIIN) Compatibility will be violated. If the primary putaway location will violate SKU (NIIN) compatibility, SWMS will look at alternative putaway locations (that are configured) until it finds a location where SKU (NIIN) Compatibility will not be violated. If no locations are found, SWMS will not select a putaway location and the operator will direct SWMS where to store the product.

A new 'SKU Compatibility' flag was added to the PB zone screen indicating to the user that a particular zone needs to be checked for SKU Compatibility issues before moving product into that zone.

RF and PB SKU (NIIN) incompatibility message screens were added to the SWMS system. A new pop-up message window is displayed when a user invalidates the SKU compatibility requirements by either receiving (including inventory adjustments and cycle counts), putaway or moves the product using PB screens. History information related to the forcing/overriding of certain pallet/product into the incompatible storage zones is tracked by SWMS using the transaction history tables.



### Commercial World Considerations

This Government solution can be easily configured to handle situations in a commercial application. The SKU (NIIN) Compatibility configuration could be deployed at any facility that utilizes dynamic storage and wants to enforce specific dynamic storage rules for a given product group.

Here are some of the other ways this functionality could be deployed within a facility:

- Managing different states of WIP
- Managing different states of Incubation within a single refrigerated area
- Managing different Value Added Processes (VAP) based on where the product was stored
- Managing different shipping methods based on where the product was stored

### Links: [More Supporting Information](#)

- [Logistics Software](#)
- [Warehouse Management Software \(HKWMS\)](#)