**Alarm Check & Trigger**

**Use Case**

**修订历史**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 章节号 | 章节名称 | 变更原因 | 变更内容描述 | 变更日期 | 版本 |
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# 前言

## Introduce

本文档用于定义警报检查和触发部分的业务需求，作为规格设计与程序设计的依据；读者为iMES 2012项目的用户，设计人员，开发人员和质检人员。

## References

# Use Cases

## UC-CHECK & TRIGGER ALARM

### 功能及目标

根据预先设好的报警标准检查是否有满足条件的情况发生，若有则触发警报

### 前置条件

报警标准已设置好

### 后置条件

创建警报记录和Mail

### 过程描述

|  |  |
| --- | --- |
| **UI** | **System** |
|  | 1. Timer触发本用例 |
|  | 1. 取得已存在于系统的SA段的报警标准记录 |
| 针对SA段每一报警标准记录 |  |
|  | 1. 统计达到或超过报警标准的PCB测试记录，生成SA段警报记录 |
|  | 1. 发mail通知需要看SA警报的人群 |
|  | 1. 取得已存在于系统的FA段的报警标准记录 |
| 针对FA段每一报警标准记录 |  |
|  | 1. 统计达到或超过报警标准的Product测试记录，生成FA段警报记录 |
|  | 1. 发mail通知需要看FA警报的人群 |
|  |  |

### 业务规则

|  |  |
| --- | --- |
| **Function** | **Rule** |
| Alarm表 | USE [HPIMES\_Online]  GO  /\*\*\*\*\*\* Object: Table [dbo].[Alarm] \*\*\*\*\*\*/  SET ANSI\_NULLS ON  GO  SET QUOTED\_IDENTIFIER ON  GO  SET ANSI\_PADDING ON  GO  CREATE TABLE [dbo].[Alarm](  [ID] [int] IDENTITY(1,1) NOT NULL,  [Stage] [char](3) NOT NULL, --SA/FA  [StartTime] [datetime] NOT NULL, --被搜索的TestLog的创建时间范围  [EndTime] [datetime] NOT NULL,  [AlarmSettingID] [int] NOT NULL, --因哪条报警标准而报警  [Line] [varchar](30) NOT NULL,  [Station] [char](10) NOT NULL,  [Family] [varchar](50) NOT NULL,  [Defect] [char](10) NOT NULL, --超过次数限制的Defect  [ReasonCode] [char](4) NOT NULL, --ALM1:良率超标 ALM2:相同不良超标  [Reason] [varchar](50) NOT NULL,  [Status] [varchar] (10) NOT NULL, --Created;Skip;Hold;Action;Release  [Cdt] [datetime] NOT NULL, --Alarm记录的创建时间  [SkipHoldPIC] [varchar](30) NULL,  [SkipHoldTime] [datetime] NULL,  [HoldModel] [varchar](511) NULL, --被Hold的多个Family或Model，每个Family或Model后都有','，"All"代表所有Family都要被Hold  [HoldLine] [varchar](255) NULL, --被Hold的多个Line，每个Line后都有','，"All"代表所有Line都要被Hold  [HoldStation] [varchar](255) NULL, --被Hold的多个Station，每个Station后都有','，"All"代表所有Station都要被Hold  [ActionPIC] [varchar](30) NULL,  [ActionTime] [datetime] NULL,  [Cause] [varchar](255) NULL,  [Action] [varchar](255) NULL,  [ReleasePIC] [varchar](30) NULL,  [ReleaseTime] [datetime] NULL,  [Remark] [varchar](1021) NULL, --新输Remark会追加到已有数据之后  CONSTRAINT [Alarm\_PK] PRIMARY KEY CLUSTERED  (  [ID] ASC  )WITH (PAD\_INDEX = OFF, STATISTICS\_NORECOMPUTE = OFF, IGNORE\_DUP\_KEY = OFF, ALLOW\_ROW\_LOCKS = ON, ALLOW\_PAGE\_LOCKS = ON) ON [HISTORY\_PCA]  ) ON [HISTORY\_PCA]  GO  SET ANSI\_PADDING OFF  GO |
| 1.Timer触发本用例 | 本用例的执行依赖于排程设置，一般来说，每隔5分钟执行一次 |
| 2. 取得SA段报警标准 | select @id=ID, @family=Family, @station=Station, @type=Type, @yieldRate=YieldRate, @minQty=MinQty, @defectType=@DefectType, @defects=Defects, @defectQty=DefectQty, @period=Period from AlarmSetting where Stage=’SA’ and LifeCycle<>1 order by Family, Type,Station,DefectType |
| 3. 统计达到或超过报警标准的PCB测试记录，生成SA段警报记录 | @curTime=GETDATE()  1)当@type=0(以良率作条件)  Select a.Line, COUNT(a.ID) as Total into #temp  from PCBTestLogBack a, PCB b, Part c  where ~~DATEDIFF(hour, a.Cdt, @curTime) <=@period~~ a.Cdt>= DATEADD(hour, -@period, @curTime) and a.Cdt<@curTime and a.Station=@station and a.PCBNo=b.PCBNo and b.PCBModelID=c.PartNo and c.Descr=@family  GROUP BY a.Line  HAVING COUNT(a.ID)>=@minQty  Insert [Alarm]  Select ‘SA’, DATEADD(hour, -@period, @curTime), @curTime, @id, a.Line, b.Station, d.Descr as Family, ‘’ as Defect, ‘ALM1’ as ReasonCode, COUNT(b.ID)+‘ / ’+ a.Total+’ < ’+ @yieldRate +’%’ as Reason, ‘Created’, GETDATE()  from #temp a, PCBTestLogBack b, PCB c, Part d where a.Line=b.Line and ~~DATEDIFF(hour, b.Cdt, @curTime) <=@period~~ b.Cdt>= DATEADD(hour, -@period, @curTime) and b.Cdt<@curTime and b.Station=@station and b.Status=1 and b.PCBNo=c.PCBNo and c.PCBModelID=d.PartNo and d.Descr=@family  GROUP BY a.Line, a.Total, b.Station, d.Descr  HAVING COUNT(b.ID)\*100 < @yieldRate \* a.Total  2)当@type=1(以相同Defect数作条件) and @defectType=0（指定Defect）  Insert [Alarm]  Select ‘SA’, DATEADD(hour, -@period, @curTime), @curTime, @id, a.Line, a.Station, d.Descr as Family, b.DefectCodeID as Defect, ‘ALM2’ as ReasonCode, ‘Defect: ’+ b.DefectCodeID+’ / Qty:’+ COUNT(a.ID)+’ >= ‘+ @defectQty as Reason, ‘Created’, GETDATE()  from PCBTestLogBack a left outer join PCBTestLogBack\_DefectInfo b on a.ID=b. PCBTestLogBackID inner join PCB c on a.PCBNo=c.PCBNo inner join Part d on c.PCBModelID=d.PartNo  where a.Status=0 and ~~DATEDIFF(hour, a.Cdt, @curTime) <=@period~~ a.Cdt>= DATEADD(hour, -@period, @curTime) and a.Cdt<@curTime and a.Station=@station and b.TriggerAlarm <>1 and b.DefectCodeID+’,’ like @defects and [d.Descr=@family](mailto:d.Descr=@family)  GROUP BY a.Line, a.Station, d.Descr, b.DefectCodeID  HAVING COUNT(a.ID) >= @defectQty  3)当@type=1(以相同Defect数作条件) and @defectType=1 and @defects is not null and @defects<>’’（Exclude指定Defect）  Insert [Alarm]  Select ‘SA’, DATEADD(hour, -@period, @curTime), @curTime, @id, a.Line, a.Station, d.Descr as Family, b.DefectCodeID as Defect, ‘ALM2’ as ReasonCode, ‘Defect: ’+ b.DefectCodeID+’ / Qty:’+ COUNT(a.ID)+’ >= ‘+ @defectQty as Reason, ‘Created’, GETDATE()  from PCBTestLogBack a left outer join PCBTestLogBack\_DefectInfo b on a.ID=b.PCBTestLogBackID inner join PCB c on a.PCBNo=c.PCBNo inner join Part d on c.PCBModelID=d.PartNo  where a.Status=0 and ~~DATEDIFF(hour, a.Cdt, @curTime) <=@period~~ a.Cdt>= DATEADD(hour, -@period, @curTime) and a.Cdt<@curTime and a.Station=@station and b.TriggerAlarm <>1 and b.DefectCodeID+’,’ not like @defects and [d.Descr=@family](mailto:d.Descr=@family)  GROUP BY a.Line, a.Station, d.Descr, b.DefectCodeID  HAVING COUNT(a.ID) >= @defectQty  4)当@type=1(以相同Defect数作条件) and @defectType=1 and (@defects is null or @defects=’’)（All Defect）  Insert [Alarm]  Select ‘SA’, DATEADD(hour, -@period, @curTime), @curTime, @id, a.Line, a.Station, d.Descr as Family, b.DefectCodeID as Defect, ‘ALM2’ as ReasonCode, ‘Defect: ’+ b.DefectCodeID+’ / Qty:’+ COUNT(a.ID)+’ >= ‘+ @defectQty as Reason, ‘Created’, GETDATE()  from PCBTestLogBack a left outer join PCBTestLogBack\_DefectInfo b on a.ID=b.PCBTestLogBackID inner join PCB c on a.PCBNo=c.PCBNo inner join Part d on c.PCBModelID=d.PartNo  where a.Status=0 and ~~DATEDIFF(hour, a.Cdt, @curTime) <=@period~~ a.Cdt>= DATEADD(hour, -@period, @curTime) and a.Cdt<@curTime and a.Station=@station and b.TriggerAlarm <>1 and [d.Descr=@family](mailto:d.Descr=@family)  GROUP BY a.Line, a.Station, d.Descr, b.DefectCodeID  HAVING COUNT(a.ID) >= @defectQty  对于上述情况中的2）3）4），需将相关LogDefect记录设置标记以阻止其参与下一轮报警统计  Update PCBTestLogBack\_DefectInfo  Set TriggerAlarm=1  where ID in (  Select a.ID from Alarm b left outer join PCBTestLogBack c on b.Line=c.Line and b.Station=c.Station left outer join PCBTestLogBack\_DefectInfo a on a.PCBTestLogBackID=c.ID inner join PCB d on d.PCBNo=c.PCBNo inner join Part e on d.PCBModelID=e.PartNo  where b.Stage=’SA’ and b.Cdt>@curTime and c.Status=0 and c.Cdt>= DATEADD(hour, -@period, @curTime) and c.Cdt<@curTime and a.DefectCodeID=b.Defect and e.Descr=b.Family  ) |
| 4. 发mail通知需要看SA警报的人群 | Mail的接收人：拥有SA段任意Alarm功能权限的人  Mail的标题：IMES Alarm  Mail的内容：统计时间段，线别，站别，Alarm原因，不良清单列表。其中，不良清单列表包括以下栏位：  Model --- 检测出不良的Product所属Model  Family --- 检测出不良的Product所属Family  Station --- 检测出不良的站别  Line --- 检测出不良的线别  PrdId --- 检测出不良的Product记录的ID  Defect --- 检测出不良的Defect Code  Defect Descr --- 检测出不良的Defect描述  Cdt --- 检测出不良的时间 |
| 5. 取得FA段报警标准 | select @id=ID, @family=Family, @station=Station, @type=Type, @yieldRate=YieldRate, @minQty=MinQty, @defectType=@DefectType, @defects=Defects, @defectQty=DefectQty, @period=Period from AlarmSetting where Stage=’FA’ and LifeCycle<>1 order by Family, Type,Station,DefectType |
| 6. 统计达到或超过报警标准的Product测试记录，生成FA段警报记录 | @curTime=GETDATE()  1)当@type=0(以良率作条件)  Select a.Line, COUNT(a.ID) as Total into #temp  from ProductTestLogBack a, Product b, Model c  where ~~DATEDIFF(hour, a.Cdt, @curTime) <=@period~~ a.Cdt>= DATEADD(hour, -@period, @curTime) and a.Cdt<@curTime and a.Station=@station and a.ProductID=b.ProductID and b.Model=c.Model and c.Family=@family  GROUP BY a.Line  HAVING COUNT(a.ID)>=@minQty  Insert [Alarm]  Select ‘FA’, DATEADD(hour, -@period, @curTime), @curTime, @id, a.Line, b.Station, d.Family, ‘’ as Defect, ‘ALM1’ as ReasonCode, COUNT(b.ID)+‘ / ’+ a.Total+’ < ’+ @yieldRate +’%’ as Reason, ‘Created’, GETDATE()  from #temp a, ProductTestLogBack b, Product c, Model d where a.Line=b.Line and ~~DATEDIFF(hour, b.Cdt, @curTime) <=@period~~ a.Cdt>= DATEADD(hour, -@period, @curTime) and a.Cdt<@curTime and b.Station=@station and b.ProductID=c.ProductID and c.Model=d.Model and d.Family=@family  GROUP BY a.Line, b.Station, d.Family  HAVING COUNT(b.ID)\*100 < @yieldRate \* a.Total  2)当@type=1(以相同Defect数作条件) and @defectType=0（指定Defect）  Insert [Alarm]  Select ‘FA’, DATEADD(hour, -@period, @curTime), @curTime, @id, a.Line, a.Station, d.Family, b.DefectCodeID as Defect, ‘ALM2’ as ReasonCode, ‘Defect: ’+ b.DefectCodeID+’ / Qty:’+ COUNT(a.ID)+’ >= ‘+ @defectQty as Reason, ‘Created’, GETDATE()  from ProductTestLogBack a left outer join ProductTestLogBack\_DefectInfo b on a.ID=b.ProductTestLogBackID inner join Product c on a.ProductID=c.ProductID inner join Model d on c.Model=d.Model  where a.Status=0 and ~~DATEDIFF(hour, a.Cdt, @curTime) <=@period~~ a.Cdt>= DATEADD(hour, -@period, @curTime) and a.Cdt<@curTime and a.Station=@station and b.TriggerAlarm <>1 and b.DefectCodeID+’,’ like @defects and [d.Family=@family](mailto:d.Family=@family)  GROUP BY a.Line, a.Station, d.Family, b.DefectCodeID  HAVING COUNT(a.ID) >= @defectQty  3)当@type=1(以相同Defect数作条件) and @defectType=1 and @defects is not null and @defects<>’’（Exclude指定Defect）  Insert [Alarm]  Select ‘FA’, DATEADD(hour, -@period, @curTime), @curTime, @id, a.Line, a.Station, d.Family, b.DefectCodeID as Defect, ‘ALM2’ as ReasonCode, ‘Defect: ’+ b.DefectCodeID+’ / Qty:’+ COUNT(a.ID)+’ >= ‘+ @defectQty as Reason, ‘Created’, GETDATE()  from ProductTestLogBack a left outer join ProductTestLogBack\_DefectInfo b on a.ID=b.ProductTestLogBackID inner join Product c on a.ProductID=c.ProductID inner join Model d on c.Model=d.Model  where a.Status=0 and ~~DATEDIFF(hour, a.Cdt, @curTime) <=@period~~ a.Cdt>= DATEADD(hour, -@period, @curTime) and a.Cdt<@curTime and a.Station=@station and b.TriggerAlarm <>1 and b.DefectCodeID+’,’ not like @defects and [d.Family=@family](mailto:d.Family=@family)  GROUP BY a.Line, a.Station, d.Family, b.DefectCodeID  HAVING COUNT(a.ID) >= @defectQty  4)当@type=1(以相同Defect数作条件) and @defectType=1 and (@defects is null or @defects=’’)（All Defect）  Insert [Alarm]  Select ‘FA’, DATEADD(hour, -@period, @curTime), @curTime, @id, a.Line, a.Station, d.Family as Family, b.DefectCodeID as Defect, ‘ALM2’ as ReasonCode, ‘Defect: ’+ b.DefectCodeID+’ / Qty:’+ COUNT(a.ID)+’ >= ‘+ @defectQty as Reason, ‘Created’, GETDATE()  from ProductTestLogBack a left outer join ProductTestLogBack\_DefectInfo b on a.ID=b.ProductTestLogBackID inner join Product c on a.ProductID=c.ProductID inner join Model d on c.Model=d.Model  where a.Status=0 and ~~DATEDIFF(hour, a.Cdt, @curTime) <=@period~~ a.Cdt>= DATEADD(hour, -@period, @curTime) and a.Cdt<@curTime and a.Station=@station and b.TriggerAlarm <>1 and [d.Family=@family](mailto:d.Family=@family)  GROUP BY a.Line, a.Station, d.Family, b.DefectCodeID  HAVING COUNT(a.ID) >= @defectQty  对于上述情况中的2）3）4），需将相关LogDefect记录设置标记以阻止其参与下一轮报警统计  Update ProductTestLogBack\_DefectInfo  Set TriggerAlarm=1  where ID in (  Select a.ID from Alarm b left outer join ProductTestLogBack c on b.Line=c.Line and b.Station=c.Station left outer join ProductTestLogBack\_DefectInfo a on a.ProductTestLogBackID=c.ID inner join Product d on d.ProductID=c.ProductID inner join Model e on d.Model=e.Model  where b.Stage=’FA’ and b.Cdt>@curTime and c.Status=0 and c.Cdt>= DATEADD(hour, -@period, @curTime) and c.Cdt<=@curTime and a.DefectCodeID=b.Defect and e.Family=b.Family  ) |
| 7. 发mail通知需要看FA警报的人群 | Mail的接收人：拥有FA段任意Alarm功能权限的人  Mail的标题：IMES Alarm  Mail的内容：统计时间段，线别，站别，Alarm原因，不良清单列表。其中，不良清单列表包括以下栏位：  Model --- 检测出不良的Product所属Model  Family --- 检测出不良的Product所属Family  Station --- 检测出不良的站别  Line --- 检测出不良的线别  PrdId --- 检测出不良的Product记录的ID  Defect --- 检测出不良的Defect Code  Defect Descr --- 检测出不良的Defect描述  Cdt --- 检测出不良的时间 |
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# Appendix

## Question