```xml
                    <xs:attribute name="p10MultiValue"
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                        fixed="2" />
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        </xs:complexType>
    </xs:element>
    <xs:element name="RegistrResidualReferenceOnly"
        type="xs:boolean" minOccurs="0" />
</xs:sequence>
- <xs:sequence minOccurs="0">
    - <xs:element name="RegistrThreeSigma">
        - <xs:complexType>
            - <xs:complexContent>
                - <xs:extension base="XYCoordType">
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                        fixed="2" />
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    </xs:element>
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- <xs:sequence minOccurs="0">
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    <xs:element
        name="RegistrResidualThreeSigmaReferenceOnly"
        type="xs:boolean" minOccurs="0" />
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<xs:element name="RegistrTolerance" type="xs:double"
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- <xs:sequence minOccurs="0">
    <xs:element name="RegistrOrtho" type="xs:double" />
    <xs:element name="RegistrOrthoReferenceOnly"
        type="xs:boolean" minOccurs="0" />
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- <xs:sequence minOccurs="0">
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        type="xs:boolean" minOccurs="0" />
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    <xs:element name="MeasuredRegistrMark"
      type="MeasuredRegistrMarkType" minOccurs="0"
      maxOccurs="unbounded" />
    <xs:element name="MeasuredRegistrError"
      type="xs:double" minOccurs="0" />
    <xs:element name="MeasuredRegistrScale" minOccurs="0">
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              type="xs:integer" use="required"
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      </xs:complexType>
    </xs:element>
    <xs:element name="MeasuredRegistrThreeSigma"
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        <xs:complexContent>
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              fixed="2" />
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        </xs:complexContent>
      </xs:complexType>
    </xs:element>
    <xs:element name="MeasuredRegistrResidual"
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        <xs:complexContent>
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            <xs:attribute name="p10MultiValue"
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    </xs:element>
    <xs:element name="MeasuredRegistrResidualThreeSigma"
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        <xs:complexContent>
          <xs:extension base="XYCoordType">
```

```xml
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            </xs:complexContent>
        </xs:complexType>
    </xs:element>
    <xs:element name="MeasuredRegistrTolerance">
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            <xs:complexContent>
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                    <xs:attribute name="p10MultiValue"
                        type="xs:integer" use="required"
                        fixed="2" />
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        </xs:complexType>
    </xs:element>
    <xs:element name="MeasuredRegistrMinimum">
        <xs:complexType>
            <xs:complexContent>
                <xs:extension base="XYCoordType">
                    <xs:attribute name="p10MultiValue"
                        type="xs:integer" use="required"
                        fixed="2" />
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            </xs:complexContent>
        </xs:complexType>
    </xs:element>
    <xs:element name="MeasuredRegistrMaximum">
        <xs:complexType>
            <xs:complexContent>
                <xs:extension base="XYCoordType">
                    <xs:attribute name="p10MultiValue"
                        type="xs:integer" use="required"
                        fixed="2" />
                </xs:extension>
            </xs:complexContent>
        </xs:complexType>
    </xs:element>
    <xs:element name="MeasuredRegistrOrtho"
        type="xs:double" minOccurs="0" />
    <xs:element name="MeasuredRegistrRelative"
        type="xs:double" minOccurs="0" />
    <xs:element name="MeasuredRegistrFileName"
        type="xs:string" minOccurs="0" />
    <xs:element name="Operator" type="xs:string"
        minOccurs="0" />
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```xml
        <xs:attribute name="groupName" type="xs:string"
          use="required" />
        <xs:attribute name="p10Start" type="xs:string" use="required"
          fixed="StartRegistrMeasurements" />
        <xs:attribute name="p10End" type="xs:string" use="required"
          fixed="EndRegistrMeasurements" />
      </xs:complexType>
 - <xs:complexType name="MeasuredRegistrMarkType">
    - <xs:sequence>
        <xs:element name="MeasuredRegistrMarkId"
          type="xs:string" />
        <xs:element name="VendorRegistrationMarkId"
          type="xs:string" minOccurs="0" />
      - <xs:element name="MaskRegistrMarkLocation">
        - <xs:complexType>
          - <xs:complexContent>
            - <xs:extension base="XYCoordType">
                <xs:attribute name="p10MultiValue"
                  type="xs:integer" use="required"
                  fixed="2" />
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            </xs:complexContent>
          </xs:complexType>
        </xs:element>
      - <xs:element name="MeasuredRegistrMarkLocation">
        - <xs:complexType>
          - <xs:complexContent>
            - <xs:extension base="XYCoordType">
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                  type="xs:integer" use="required"
                  fixed="2" />
              </xs:extension>
            </xs:complexContent>
          </xs:complexType>
        </xs:element>
      - <xs:element name="MeasuredRegistrMarkError">
        - <xs:complexType>
          - <xs:complexContent>
            - <xs:extension base="XYCoordType">
                <xs:attribute name="p10MultiValue"
                  type="xs:integer" use="required"
                  fixed="2" />
              </xs:extension>
            </xs:complexContent>
          </xs:complexType>
        </xs:element>
      - <xs:element name="MeasuredRegistrMarkResidual">
        - <xs:complexType>
          - <xs:complexContent>
            - <xs:extension base="XYCoordType">
```

```xml
                    <xs:attribute name="p10MultiValue"
                        type="xs:integer" use="required"
                        fixed="2" />
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            </xs:complexContent>
        </xs:complexType>
    </xs:element>
</xs:sequence>
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            use="required" />
        <xs:attribute name="p10Start" type="xs:string" use="required"
            fixed="StartMeasuredRegistrMark" />
        <xs:attribute name="p10End" type="xs:string" use="required"
            fixed="EndMeasuredRegistrMark" />
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- <xs:complexType name="ClosureMeasurementsType">
    - <xs:sequence>
        <xs:element name="RegistrClosureEquipReqd"
            type="xs:string" minOccurs="0" maxOccurs="unbounded"
            />
        <xs:element name="EquipSiteReqd" type="xs:string"
            minOccurs="0" maxOccurs="unbounded" />
        <xs:element name="RegistrClosureEquipUsed"
            type="xs:string" minOccurs="0" />
        <xs:element name="EquipSiteUsed" type="xs:string"
            minOccurs="0" />
        <xs:element name="RegistrClosure" type="xs:double"
            minOccurs="0" />
        <xs:element name="RegistrClosureReferenceOnly"
            type="xs:boolean" minOccurs="0" />
        - <xs:element name="MeasuredRegistrClosure">
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                - <xs:complexContent>
                    - <xs:extension base="XYCoordType">
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                            type="xs:integer" use="required"
                            fixed="2" />
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                </xs:complexContent>
            </xs:complexType>
        </xs:element>
        - <xs:sequence minOccurs="0" maxOccurs="unbounded">
            - <xs:element name="MeasuredClosureReading">
                - <xs:complexType>
                    - <xs:complexContent>
                        - <xs:extension base="XYCoordType">
                            <xs:attribute name="p10MultiValue"
                                type="xs:integer" use="required"
                                fixed="2" />
                        </xs:extension>
```

```xml
              </xs:complexContent>
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          </xs:element>
          <xs:element name="MeasuredClosureLocation"
            type="xs:string" minOccurs="0" />
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        <xs:element name="Operator" type="xs:string"
          minOccurs="0" />
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        use="required" />
      <xs:attribute name="p10Start" type="xs:string" use="required"
        fixed="StartClosureMeasurements" />
      <xs:attribute name="p10End" type="xs:string" use="required"
        fixed="EndClosureMeasurements" />
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      - <xs:sequence>
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          minOccurs="0" />
        <xs:element name="CdToneClear" type="xs:boolean"
          minOccurs="0" />
        <xs:element name="CdMorphography" type="xs:string"
          minOccurs="0" />
        <xs:element name="CdPercentClear" type="xs:double"
          minOccurs="0" />
        - <xs:element name="CdPercentClearWindow"
            minOccurs="0">
          - <xs:complexType>
            - <xs:complexContent>
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                    type="xs:integer" use="required"
                    fixed="4" />
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            </xs:complexType>
          </xs:element>
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          minOccurs="0" />
        - <xs:element name="CdOrientation" minOccurs="0">
          - <xs:simpleType>
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                <xs:enumeration value="VERTICAL" />
                <xs:enumeration value="HORIZONTAL" />
              </xs:restriction>
            </xs:simpleType>
          </xs:element>
        <xs:element name="CdPitch" type="xs:double"
          minOccurs="0" />
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```xml
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   minOccurs="0" />
<xs:element name="CdTolerance" type="xs:double"
   minOccurs="0" />
<xs:element name="CdRange" type="xs:double"
   minOccurs="0" />
<xs:element name="CdThreeSigma" type="xs:double"
   minOccurs="0" />
<xs:element name="CdDeviationFromTarget"
   type="xs:double" minOccurs="0" />
<xs:element name="CdDeviationFromMean"
   type="xs:double" minOccurs="0" />
<xs:element name="CdStd" type="xs:string" minOccurs="0"
   />
<xs:element name="CdCorrelationId" type="xs:string"
   minOccurs="0" />
<xs:element name="CdEquipReqd" type="xs:string"
   minOccurs="0" maxOccurs="unbounded" />
<xs:element name="EquipSiteReqd" type="xs:string"
   minOccurs="0" maxOccurs="unbounded" />
<xs:element name="CdEquipUsed" type="xs:string"
   minOccurs="0" />
<xs:element name="EquipSiteUsed" type="xs:string"
   minOccurs="0" />
<xs:element name="CdMeasurementDate"
   type="xs:dateTime" minOccurs="0" />
<xs:element name="NumberOfCds" type="xs:unsignedInt"
   minOccurs="0" />
<xs:element name="CdMeasurement"
   type="CdMeasurementType" minOccurs="0"
   maxOccurs="unbounded" />
<xs:element name="MeasuredCdMean" type="xs:double"
   minOccurs="0" />
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   minOccurs="0" />
<xs:element name="MeasuredCdMax" type="xs:double"
   minOccurs="0" />
<xs:element name="MeasuredCdTolerance"
   type="xs:double" minOccurs="0" />
<xs:element name="MeasuredCdRange" type="xs:double"
   minOccurs="0" />
<xs:element name="MeasuredCdThreeSigma"
   type="xs:double" minOccurs="0" />
<xs:element name="MeasuredCdDeviationFromTarget"
   type="xs:double" minOccurs="0" />
<xs:element name="MeasuredCdDeviationFromMean"
   type="xs:double" minOccurs="0" />
<xs:element name="MeasuredCdFileName" type="xs:string"
   minOccurs="0" />
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```xml
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            <xs:attribute name="p10Start" type="xs:string" use="required"
                fixed="StartCdGroupMeasurements" />
            <xs:attribute name="p10End" type="xs:string" use="required"
                fixed="EndCdGroupMeasurements" />
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    <xs:complexType name="CdMeasurementType">
        <xs:sequence>
        <xs:sequence minOccurs="0">
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                minOccurs="0" />
            <xs:element name="CdLocation">
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                            <xs:attribute name="p10MultiValue"
                                type="xs:integer" use="required"
                                fixed="2" />
                        </xs:extension>
                    </xs:complexContent>
                </xs:complexType>
            </xs:element>
        </xs:sequence>
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            <xs:element name="MeasuredCdLocation">
                <xs:complexType>
                    <xs:complexContent>
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                            <xs:attribute name="p10MultiValue"
                                type="xs:integer" use="required"
                                fixed="2" />
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                </xs:complexType>
            </xs:element>
            <xs:element name="MeasuredCd" type="xs:double" />
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            <xs:attribute name="p10Start" type="xs:string" use="required"
                fixed="StartCdMeasurement" />
            <xs:attribute name="p10End" type="xs:string" use="required"
                fixed="EndCdMeasurement" />
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    <xs:complexType name="CdSetResultsType">
        <xs:sequence>
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```xml
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  minOccurs="0" />
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  minOccurs="0" />
<xs:element name="CdTolerance" type="xs:double"
  minOccurs="0" />
<xs:element name="CdRange" type="xs:double"
  minOccurs="0" />
<xs:element name="CdThreeSigma" type="xs:double"
  minOccurs="0" />
<xs:element name="CdDeviationFromTarget"
  type="xs:double" minOccurs="0" />
<xs:element name="CdDeviationFromMean"
  type="xs:double" minOccurs="0" />
<xs:element name="MeasuredCdMean" type="xs:double"
  minOccurs="0" />
<xs:element name="MeasuredCdMin" type="xs:double"
  minOccurs="0" />
<xs:element name="MeasuredCdMax" type="xs:double"
  minOccurs="0" />
<xs:element name="MeasuredCdTolerance"
  type="xs:double" minOccurs="0" />
<xs:element name="MeasuredCdRange" type="xs:double"
  minOccurs="0" />
<xs:element name="MeasuredCdThreeSigma"
  type="xs:double" minOccurs="0" />
<xs:element name="MeasuredCdDeviationFromTarget"
  type="xs:double" minOccurs="0" />
<xs:element name="MeasuredCdDeviationFromMean"
  type="xs:double" minOccurs="0" />
</xs:sequence>
    <xs:attribute name="groupName" type="xs:string"
      use="required" />
    <xs:attribute name="p10Start" type="xs:string" use="required"
      fixed="StartCdSetResults" />
    <xs:attribute name="p10End" type="xs:string" use="required"
      fixed="EndCdSetResults" />
  </xs:complexType>
- <xs:complexType name="CdXyResultsType">
  - <xs:sequence>
    <xs:element name="CdXGroup" type="xs:string"
      minOccurs="0" maxOccurs="unbounded" />
    <xs:element name="CdYGroup" type="xs:string"
      minOccurs="0" maxOccurs="unbounded" />
    <xs:element name="CdXySite" type="CdXySiteType"
      minOccurs="0" maxOccurs="unbounded" />
    <xs:element name="CdXyTolerance" type="xs:double"
      minOccurs="0" />
```

```xml
                <xs:element name="CdXyDeviation" type="xs:double"
                   minOccurs="0" />
                <xs:element name="CdXyReferenceOnly" type="xs:boolean"
                   minOccurs="0" />
                <xs:element name="MeasuredCdXyTolerance"
                   type="xs:double" minOccurs="0" />
                <xs:element name="MeasuredCdXyDeviation"
                   type="xs:double" minOccurs="0" />
                <xs:element name="MeasuredCdXyMorphography"
                   type="xs:string" minOccurs="0" />
                <xs:element name="MeasuredCdXyToneClear"
                   type="xs:boolean" minOccurs="0" />
        </xs:sequence>
            <xs:attribute name="groupName" type="xs:string"
               use="required" />
            <xs:attribute name="p10Start" type="xs:string" use="required"
               fixed="StartCdXyResults" />
            <xs:attribute name="p10End" type="xs:string" use="required"
               fixed="EndCdXyResults" />
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 - <xs:complexType name="CdXySiteType">
        - <xs:sequence>
          - <xs:sequence minOccurs="0">
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            - <xs:element name="CdHorizontalLocation">
               - <xs:complexType>
                 - <xs:complexContent>
                    - <xs:extension base="XYCoordType">
                         <xs:attribute name="p10MultiValue"
                            type="xs:integer" use="required"
                            fixed="2" />
                      </xs:extension>
                   </xs:complexContent>
                 </xs:complexType>
              </xs:element>
           </xs:sequence>
           <xs:element name="CdHorizontalMorphography"
              type="xs:string" minOccurs="0" />
           <xs:element name="CdHorizontalToneClear"
              type="xs:boolean" minOccurs="0" />
           <xs:element name="MeasuredHorizontalCd"
              type="xs:double" />
         - <xs:sequence minOccurs="0">
             <xs:element name="CdVerticalId" type="xs:string" />
           - <xs:element name="CdVerticalLocation">
             - <xs:complexType>
               - <xs:complexContent>
                  - <xs:extension base="XYCoordType">
```

```xml
                        <xs:attribute name="p10MultiValue"
                            type="xs:integer" use="required"
                            fixed="2" />
                    </xs:extension>
                </xs:complexContent>
            </xs:complexType>
        </xs:element>
    </xs:sequence>
    <xs:element name="CdVerticalMorphography"
        type="xs:string" minOccurs="0" />
    <xs:element name="CdVerticalToneClear" type="xs:boolean"
        minOccurs="0" />
    <xs:element name="MeasuredVerticalCd" type="xs:double"
        />
</xs:sequence>
        <xs:attribute name="groupName" type="xs:string"
            use="required" />
        <xs:attribute name="p10Start" type="xs:string" use="required"
            fixed="StartCdXySite" />
        <xs:attribute name="p10End" type="xs:string" use="required"
            fixed="EndCdXySite" />
    </xs:complexType>
- <xs:complexType name="CdIsoDenseResultsType">
    - <xs:sequence>
        <xs:element name="CdIsoGroup" type="xs:string"
            minOccurs="0" maxOccurs="unbounded" />
        <xs:element name="CdDenseGroup" type="xs:string"
            minOccurs="0" maxOccurs="unbounded" />
        <xs:element name="CdIsoDenseTolerance"
            type="xs:double" minOccurs="0" />
        <xs:element name="CdIsoDenseReferenceOnly"
            type="xs:boolean" minOccurs="0" />
        <xs:element name="MeasuredCdIsoMean" type="xs:double"
            minOccurs="0" />
        <xs:element name="MeasuredCdIsoRange"
            type="xs:double" minOccurs="0" />
        <xs:element name="MeasuredCdDenseMean"
            type="xs:double" minOccurs="0" />
        <xs:element name="MeasuredCdDenseRange"
            type="xs:double" minOccurs="0" />
        <xs:element name="MeasuredCdIsoDenseTolerance"
            type="xs:double" minOccurs="0" />
    </xs:sequence>
        <xs:attribute name="groupName" type="xs:string"
            use="required" />
        <xs:attribute name="p10Start" type="xs:string" use="required"
            fixed="StartCdIsoDenseResults" />
        <xs:attribute name="p10End" type="xs:string" use="required"
            fixed="EndCdIsoDenseResults" />
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- <xs:complexType name="DefectMeasurementsType">
```

```xml
- <xs:sequence>
    <xs:element name="DefectQualityId" type="xs:string"
      minOccurs="0" />
  - <xs:element name="InspectionArea" minOccurs="0"
      maxOccurs="unbounded">
    - <xs:complexType>
      - <xs:complexContent>
        - <xs:extension base="WindowType">
            <xs:attribute name="p10MultiValue"
              type="xs:integer" use="required"
              fixed="4" />
          </xs:extension>
        </xs:complexContent>
      </xs:complexType>
    </xs:element>
  - <xs:element name="InspectionAreaExclude" minOccurs="0"
      maxOccurs="unbounded">
    - <xs:complexType>
      - <xs:complexContent>
        - <xs:extension base="WindowType">
            <xs:attribute name="p10MultiValue"
              type="xs:integer" use="required"
              fixed="4" />
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        </xs:complexContent>
      </xs:complexType>
    </xs:element>
    <xs:element name="VisualInspCriteria" type="xs:string"
      minOccurs="0" maxOccurs="unbounded" />
    <xs:element name="DieToDieInspection" type="xs:boolean"
      />
    <xs:element name="DieToDieMeasurements"
      type="xs:boolean" />
  - <xs:sequence minOccurs="0" maxOccurs="unbounded">
      <xs:element name="DefectEquipReqd" type="xs:string"
        />
      <xs:element name="EquipSiteReqd" type="xs:string"
        minOccurs="0" maxOccurs="unbounded" />
      <xs:element name="DefectInspModeReqd"
        type="xs:string" minOccurs="0" />
      <xs:element name="DefectInspPixelSizeReqd"
        type="xs:double" minOccurs="0" />
    - <xs:sequence minOccurs="0" maxOccurs="unbounded">
        <xs:element name="DefectType" type="xs:string"
          />
        <xs:element name="DefectInspSensitivityReqd"
          type="xs:string" />
      - <xs:sequence minOccurs="0"
          maxOccurs="unbounded">
```

```xml
            <xs:element name="BinSize" type="xs:string"
              />
            <xs:element name="SeverityCriterionReqd"
              type="xs:string" />
          </xs:sequence>
        </xs:sequence>
        <xs:element name="DefectSetupFileNameReqd"
          type="xs:string" minOccurs="0" />
      </xs:sequence>
    - <xs:sequence minOccurs="0">
        <xs:element name="DefectEquipUsed" type="xs:string"
          />
        <xs:element name="EquipSiteUsed" type="xs:string"
          minOccurs="0" />
        <xs:element name="DefectInspModeUsed"
          type="xs:string" minOccurs="0" />
        <xs:element name="DefectInspPixelSizeUsed"
          type="xs:double" minOccurs="0" />
      - <xs:sequence minOccurs="0" maxOccurs="unbounded">
          <xs:element name="DefectType" type="xs:string"
            />
          <xs:element name="DefectInspSensitivityUsed"
            type="xs:string" />
        - <xs:sequence minOccurs="0"
            maxOccurs="unbounded">
            <xs:element name="BinSize" type="xs:string"
              />
            <xs:element name="SeverityCriterionUsed"
              type="xs:string" />
          </xs:sequence>
        </xs:sequence>
        <xs:element name="DefectSetupFileNameUsed"
          type="xs:string" minOccurs="0"
          maxOccurs="unbounded" />
      </xs:sequence>
      <xs:element name="DefectInspDate" type="xs:dateTime"
        minOccurs="0" />
    - <xs:sequence minOccurs="0" maxOccurs="unbounded">
        <xs:element name="RepairEquipReqd" type="xs:string"
          />
        - <xs:sequence minOccurs="0" maxOccurs="unbounded">
            <xs:element name="EquipSiteReqd"
              type="xs:string" />
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      </xs:sequence>
    - <xs:sequence minOccurs="0">
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          />
        - <xs:sequence minOccurs="0" maxOccurs="unbounded">
```

```xml
            <xs:element name="EquipSiteUsed"
                type="xs:string" />
        </xs:sequence>
    </xs:sequence>
-   <xs:element name="MeasuredInspectionArea"
        minOccurs="0" maxOccurs="unbounded">
  -   <xs:complexType>
    -   <xs:complexContent>
      -   <xs:extension base="WindowType">
              <xs:attribute name="p10MultiValue"
                  type="xs:integer" use="required"
                  fixed="4" />
          </xs:extension>
        </xs:complexContent>
      </xs:complexType>
    </xs:element>
-   <xs:element name="MeasuredInspectionAreaExclude"
        minOccurs="0" maxOccurs="unbounded">
  -   <xs:complexType>
    -   <xs:complexContent>
      -   <xs:extension base="WindowType">
              <xs:attribute name="p10MultiValue"
                  type="xs:integer" use="required"
                  fixed="4" />
          </xs:extension>
        </xs:complexContent>
      </xs:complexType>
    </xs:element>
    <xs:element name="MeasuredDefectDensity"
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        minOccurs="0" />
    <xs:element name="MeasuredDefectCountRep"
        type="xs:int" minOccurs="0" />
    <xs:element name="MeasuredDefectCountWithinSpec"
        type="xs:int" minOccurs="0" />
    <xs:element name="MeasuredDefectiveDieDensity"
        type="xs:double" minOccurs="0" />
    <xs:element name="MeasuredDefectiveDieCount"
        type="xs:int" minOccurs="0" />
    <xs:element name="MeasuredDefectiveDieCountRep"
        type="xs:int" minOccurs="0" />
    <xs:element name="MeasuredPercentDefectiveDie"
        type="xs:double" minOccurs="0" />
    <xs:element name="MeasuredDefectFileName"
        type="xs:string" minOccurs="0" maxOccurs="unbounded"
        />
    <xs:element name="PrePellInspectionId" type="xs:string"
        minOccurs="0" />
```

```xml
<xs:element name="PrePellInspectionDateTime"
    type="xs:dateTime" minOccurs="0" />
<xs:element name="PostPellInspectionId" type="xs:string"
    minOccurs="0" />
<xs:element name="PostPellInspectionDateTime"
    type="xs:dateTime" minOccurs="0" />
<xs:element name="Operator" type="xs:string"
    minOccurs="0" />
</xs:sequence>
    <xs:attribute name="groupName" type="xs:string"
        use="required" />
    <xs:attribute name="p10Start" type="xs:string" use="required"
        fixed="StartDefectMeasurements" />
    <xs:attribute name="p10End" type="xs:string" use="required"
        fixed="EndDefectMeasurements" />
</xs:complexType>
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    <xs:sequence>
        <xs:element name="SurfaceQualityId" type="xs:string"
            minOccurs="0" />
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            <xs:element name="SurfInspEquipReqd"
                type="xs:string" />
            <xs:element name="EquipSiteReqd" type="xs:string"
                minOccurs="0" maxOccurs="unbounded" />
            <xs:element name="SurfInspModeReqd"
                type="xs:string" minOccurs="0" />
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                type="xs:double" minOccurs="0" />
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                    type="xs:string" />
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                    type="xs:string" />
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                    maxOccurs="unbounded">
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                        />
                    <xs:element name="SeverityCriterionReqd"
                        type="xs:string" />
                </xs:sequence>
            </xs:sequence>
            <xs:element name="SurfInspSetupFileNameReqd"
                type="xs:string" minOccurs="0" />
        </xs:sequence>
        <xs:sequence minOccurs="0">
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                minOccurs="0" />
```

```xml
            <xs:element name="SurfInspModeUsed"
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              type="xs:double" minOccurs="0" />
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              <xs:element name="SurfDefectType"
                type="xs:string" />
              <xs:element name="SurfInspSensitivityUsed"
                type="xs:string" />
            - <xs:sequence minOccurs="0"
                maxOccurs="unbounded">
                <xs:element name="BinSize" type="xs:string"
                  />
                <xs:element name="SeverityCriterionUsed"
                  type="xs:string" />
              </xs:sequence>
            </xs:sequence>
            <xs:element name="SurfInspSetupFileNameUsed"
              type="xs:string" minOccurs="0" />
          </xs:sequence>
          <xs:element name="MeasuredDefectCount" type="xs:int"
            minOccurs="0" />
          <xs:element name="MeasuredDefectCountWithinSpec"
            type="xs:int" minOccurs="0" />
          <xs:element name="MeasuredSurfInspFileName"
            type="xs:string" minOccurs="0" maxOccurs="unbounded"
            />
          <xs:element name="PrePellInspectionId" type="xs:string"
            minOccurs="0" />
          <xs:element name="PrePellInspectionDateTime"
            type="xs:dateTime" minOccurs="0" />
          <xs:element name="PostPellInspectionId" type="xs:string"
            minOccurs="0" />
          <xs:element name="PostPellInspectionDateTime"
            type="xs:dateTime" minOccurs="0" />
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            minOccurs="0" />
      </xs:sequence>
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            use="required" />
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            fixed="StartSurfaceInspMeasurements" />
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            fixed="EndSurfaceInspMeasurements" />
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        - <xs:sequence>
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            <xs:element name="Y1" type="xs:double" />
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```

```
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- <xs:complexType name="XyrType">
        - <xs:sequence>
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            <xs:element name="R" type="xs:double" />
        </xs:sequence>
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- <xs:complexType name="XYCoordType">
        - <xs:sequence>
            <xs:element name="X" type="xs:double" />
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            </xs:complexType>
- <xs:complexType name="DateNameType">
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            <xs:element name="Date" type="xs:dateTime" />
            <xs:element name="Name" type="xs:string" />
        </xs:sequence>
            </xs:complexType>
        </xs:schema>
```

8 Terminology and Usage

8.1 Values in parentheses indicate the only acceptable alternative data values for the record and must be transmitted exactly as shown. (x,y) indicates the acceptable data value must be an ordered pair of dimensions, coordinates, repeat counts, filenames, or other parameters. (x,y,z) indicates an ordered triple. (x1,y1,z1) indicates a window with two ordered pairs, (x1,y1) and (x2,y2), describing the lower left and upper right corners respectively. Records without specified alternative values may have any appropriate data value.

8.1.1 ADDITIONAL_MASK_INFO — Any information necessary to specify the overall mask set which cannot be specified elsewhere in the order structure; must be brought to the attention of mask vendor personnel.

8.1.2 ADDITIONAL_MASK_SET_INFO — Any information necessary to specify the overall mask set which cannot be specified elsewhere in the order structure; must be brought to the attention of mask vendor personnel.

8.1.3 ADDITIONAL_MILESTONE_INFO — Text for the vendor to supply additional information regarding the status of the mask.

8.1.4 ADDITIONAL_PATTERN_INFO — Any information necessary to specify the pattern(s) which cannot be specified elsewhere in the order structure; must be brought to the attention of mask vendor personnel.

8.1.5 ADDITIONAL_RESULTS_INFO — Any information necessary to supply information to the customer which cannot be specified elsewhere in the <mask_results> structure; must be brought to the attention of customer personnel.

8.1.6 AIM_CD_DELTA — For aerial imaging metrology, the percentage CD width variation between comparable non-defective features. Used for CD defect measurement across or between features. If this keyword appears as a <mask_option>,   then   AIM_WAVELENGTH,   WAFER_EXPOSURE_NUMERICAL_APERATURE, WAFER_EXPOSURE_SIGMA APERATURE, and WAFER_EXPOSURE_ILLUMINATION must all also appear under <mask_option>. Appearance of this keyword as a <mask_option> does not require aerial imaging metrology for the mask, but merely sets the conditions under which it should be used if it its deemed necessary by the mask maker, based on their negotiated agreements with the customer.

8.1.7 AIM_FLUX_INTENSITY_DELTA — For aerial imaging metrology, the percentage dimensional area variation between comparable non-defective areas. Used for contact and via defect measurement. If this keyword appears as a <mask_option>, then AIM_WAVELENGTH, WAFER_EXPOSURE_NUMERICAL_APERATURE, WAFER_EXPOSURE_SIGMA APERATURE, and WAFER_EXPOSURE_ILLUMINATION must all also appear under <mask_option>. Appearance of this keyword as a <mask_option> does not require aerial imaging metrology for the mask, but merely sets the conditions under which it should be used if it its deemed necessary by the mask maker, based on their negotiated agreements with the customer.

8.1.8 AIM_INTENSITY_VARIATION_DELTA — For aerial imaging metrology, the percentage intensity variation between comparable non-defective areas. Used for edge or isolated defect measurement. If this keyword appears as a <mask_option>, then AIM_WAVELENGTH, WAFER_EXPOSURE_NUMERICAL_APERATURE, WAFER_EXPOSURE_SIGMA APERATURE, and WAFER_EXPOSURE_ILLUMINATION must all also appear under <mask_option>. Appearance of this keyword as a <mask_option> does not require aerial imaging metrology for the mask, but merely sets the conditions under which it should be used if it its deemed necessary by the mask maker, based on their negotiated agreements with the customer.

8.1.9 AIM_WAVELENGTH — Wavelength in nanometers to be used for <aerial_image_data> measurements This keyword may appear in addition to PSM_WAVELENGTH for a single MASK_ID, though the values of the two should usually be the same.

8.1.10 ALL_PATTERNS_APPROVAL_REQD — (T or F)

8.1.11 ALL_PATTERNS_APPROVED — (date) date approval was granted by customer

8.1.12 APPROVAL_REQD — If present, indicates that no mask(s) are to be written until the approval is explicitly granted by the customer. The alphanumeric data field describes the items to be approved.

8.1.13 APPROVED — (T or F) date approval was granted by customer for APPROVAL_REQD.

8.1.14 ARRAY_CENTER — (x,y) Center of circular array limit, relative to the nominal center of the mask (chrome side up).

8.1.15 ARRAY_DIAMETER — Diameter of circular array limit to be applied to pattern files.

8.1.16 ARRAY_DIAMETER_INCLUSIVE — (T or F) If T, then die which are at least partially included within the circular array limit must be included in the array. If F, then only die which are wholly included within the circular array limit may be included in the array.

8.1.17 ATTENUATOR — Attenuator Mask_Coating used for Embedded Attenuated Phase Shift Masks. (MoSi, TinSin, ZrSi) or any other material agreed upon between customer/vendor. May be used in conjunction with other Mask_Coatings.

8.1.18 AUTO_INSPECTION_REQD — (T or F) Automated inspection of the mask for defects is required.

8.1.19 BARCODE_LOCATION — (x,y) Location to place the center of the vendor-generated barcode, relative to the nominal center of the mask (chrome side up).

8.1.20 BARCODE_ROTATION — (0, 90, 180, or 270) Degrees the barcode is to be rotated counterclockwise (before mirroring).

8.1.21 BARCODE_TEXT — Text to be used by the vendor to build the barcode.

8.1.22 BARCODE_TYPE — (ASM, ASET, CANON, GCA, NIKON_STD or NIKON_CODE39, UT1X_10, UT1X_24 and UT_XLS, and others on request) Encoding system to be used by the vendor to build the required barcode.

8.1.23 BILLING_ADDRESS — Address for billing.

8.1.24 BILLING_CONTACT — Name of person to contact for billing purposes.

8.1.25 BILLING_EMAIL — Internet address for BILLING_CONTACT.

8.1.26 BILLING_FAX — Phone number for facsimile machine of BUSINESS_CONTACT.

8.1.27 BILLING_PHONE — Phone number for BILLING_CONTACT.

8.1.28 BIN_SIZE — size of defect for SEVERITY_CRITERION_REQD sorting.

8.1.29 BLANK_BIREFRINGENCE_REQD — (number) The required degree to which the substrate used to make the mask refracts an incident beam of unpolarized light into two separate beams of opposite polarization, expressed as nanometers per centimeter (nm/cm).

8.1.30 BLANK_BIREFRINGENCE_USED — (number) The measured degree to which the substrate used to make the mask refracts an incident beam of unpolarized light into two separate beams of opposite polarization, expressed as nanometers per centimeter (nm/cm).

8.1.31 BLANK_DATE_OF_MFG — (date) The date of manufacture of the substrate used to make the mask as supplied by the mask blank vendor.

8.1.32 BLANK FLATNESS — (0.25, 0.5, 1, 2, 5, 10, 20, or other numeric value) Flatness within quality area (see SEMI P1).

8.1.33 BLANK_FLATNESS_USED — The flatness within the quality area of the mask blank used, as specified by the mask blank supplier or as measured by the mask vendor.

8.1.34 BLANK_GRADE — (text) A designation of the relative defectivity of the substrate as specified by the mask blank vendor.

8.1.35 BLANK_INDEX_OF_REFRACTION — (number) The ratio of the velocity of light of a given wavelength in a vacuum to the velocity of light in the substrate used to make the mask.

8.1.36 BLANK_LENGTH — (number) The X-axis dimension of the substrate used to make the mask, as specified by the mask blank vendor.

8.1.37 BLANK_LOT — (text) The mask blank vendor's manufacture lot identification for the substrate used to make the mask.

8.1.38 BLANK_SIZE — (2.5/60, 3/60, 3.5/60, 4/60, 4/90, 4/250, 5/60, 5/90, 5/250, 6/90, 6/120, 6/150, 6/250, 7/120, 7/150, 7/250, 7.25R/150 or 9/350) Nominal edge length (in inches) and thickness (in mils) of square substrate; 7.25R/150 is a round substrate. (See SEMI P1.)

8.1.39 BLANK_THICKNESS — (number) The Z-axis dimension of the substrate used to make the mask, as specified by the mask blank vendor.

8.1.40 BLANK_TYPE — (DFS, MFS, HTE, LTE, ULTE, WC, SL or EUV) Durable Fused Silica, Modified Fused Slica, high-, low-, and ultralow thermal expansion glass (see SEMI P1.) WC and SL indicate White Crown and soda lime glass. EUV is for Extreme Ultraviolet applications.

8.1.41 BLANK_VENDOR — (text) Standard vendor identification code for the mask blank vendor of the substrate used to make the mask.

8.1.42 BLANK_WIDTH — (number) The Y-axis dimension of the substrate used to make the mask, as specified by the mask blank vendor.

8.1.43 BLANKET_PO_NUMBER — Alphanumeric blanket purchase order number.

8.1.44 BOOLEAN — Logical operation to be performed on one or more following pattern files. Data value meanings are:

- NONE — no logical operation to be performed; sizing/scaling may still be performed,

- OR — logical union of two files,

- AND — logical intersection of two files,

- NOT — logical inverse of one file,

- XOR — logical union of two files, excluding all areas in which the two intersect, and

- MINUS — logical difference between input file 1 and input file 2; i.e., logically removing from input file 1 the portions of all digitized geometry which overlap with digitized geometry in input file 2.

- REVERSE — (T or F) Reverse the tone of the output layer. If T (true) a negative image of the layer is produced. REVERSE is performed after all sizing and scaling have been completed for the current data manipulation step. The default value for REVERSE is F (false).

8.1.45 BOTTOM_PELLICLE_CENTRALITY_ERROR — (x,y,rotation) Maximum misplacement in micrometers and microradians of pellicle mounting, relative to the nominal center of the mask. The nominal center is determined using the bottom and left edges (chrome side up).

8.1.46 BOTTOM_PELLICLE_TYPE — Alphanumeric brand and model of acceptable pellicle for the glass side of the mask. If multiple pellicles are listed, they are listed with the most preferred first and then in declining preference.

8.1.47 BOTTOM_PELLICLE_USED — (text) The pellicle vendor's part number of the pellicle applied to the nonpatterned surface of the mask.

8.1.48 BUSINESS_ADDRESS — Address of person placing the order.

8.1.49 BUSINESS_CONTACT — Name of person placing the order.

8.1.50 BUSINESS_EMAIL — Internet address for BUSINESS_CONTACT.

8.1.51 BUSINESS_FAX — Phone number for facsimile machine of BUSINESS_CONTACT.

8.1.52 BUSINESS_PHONE — Phone number for BUSINESS_CONTACT.

8.1.53 BUTTING_ERROR — Maximum misalignment of features due to stitching of adjacent fields in the segmented writing of a mask.

8.1.54 BUTTING_ERROR_METHOD — Alphanumeric description of the method to be used to measure butting error.

8.1.55 CD_CORRELATION_ID — Alphanumeric date or other identification of the vendor/customer correlation test to be used in measuring CDs.

8.1.56 CD_DATA — Size of critical dimension feature in data as supplied in the pattern file.

8.1.57 CD_DENSE_GROUP — Identifies a <cd_group> for use in iso/dense analysis. Data field must match data field of a START_CD in a <cd_group>. The <cd_group> must contain CD_MORPHOGRAPHY with data value DENSE.

8.1.58 CD_DEVIATION_FROM_MEAN — (numeric) Maximum acceptable deviation of any of the customer-required CD measurements from the mean of those measurements. (See Related Information 1 at the end of this standard.)

8.1.59 CD_DEVIATION_FROM_TARGET — (numeric) Maximum acceptable deviation of any of the customer-required CD measurements from the CD_TARGET. If only one data value (p) appears in the data field, the tolerance is considered +/- symmetrically about CD_TARGET. If two data values (p [,m]) appear, then the first is the maximum amount by which deviation is allowed larger than CD_TARGET, and the second is the maximum amount by which deviation is allowed smaller than CD_TARGET. The comma and second half of the argument are optional in the syntax (p[,m]) where p = the positive and m = the negative value for non-symmetric tolerances; if only p is specified, the positive and negative tolerances are assumed to be symmetric. (See Related Information 1 at the end of this standard.)

8.1.60 CD_DIGITIZED — (T or F) If T, critical dimension in pattern is digitized data.

8.1.61 CD_DRAWING — The uniquely identified (for each customer) document which shows the CD structure itself, and may show the place within the CD which are to be measured.

8.1.62 CD_EQUIP_REQD — Alphanumeric identification of acceptable equipment for measuring critical dimensions.

8.1.63 CD_EQUIP_USED — Alphanumeric identification of equipment used for measuring critical dimensions.

8.1.64 CD_FEATURE — Text describing the feature to be used for CD measurement.

8.1.65 CD_GROUP_NAME — Identifies a <cd_group> to be included in the <cd_set>. The data field must match the data field of START_CD in the referenced <cd_group>.

8.1.66 CD_HORIZONTAL_ID — CD_SITE_ID of CD_HORIZONTAL_LOCATION.

8.1.67 CD_HORIZONTAL_LOCATION — (x,y) Location of critical dimension feature. The CD_ORIENTATION of the feature must be HORIZONTAL. If CD_HORIZONTAL_LOCATION appears in <mask_options>, then the (x,y) coordinates are relative to the nominal center of the mask (chrome side up). If CD_HORIZONTAL_LOCATION appears in <pattern_options>, then the (x,y) coordinates are relative to the center of the pattern or cell, before mirroring or scaling. If CD_HORIZONTAL_LOCATION appears in <mask_results>, then the (x,y) coordinates are relative to the nominal center of the mask (chrome side up), even if the original CD_HORIZONTAL_LOCATION was in <pattern_options>.

8.1.68 CD_HORIZONTAL_MORPHOGRAPHY — CD_MORPHOGRAPHY of the individual CD_HORIZONTAL_ID feature.

8.1.69 CD_HORIZONTAL_TONE_CLEAR — CD_TONE_CLEAR of the individual CD_HORIZONTAL_ID feature.

8.1.70 CD_ISO_DENSE_REFERENCE_ONLY — (T or F) If T, indicates that the <cd_iso_dense_definition> is to be measured and the data transmitted to the customer (if requested by SHIP_CD_DATA), but that deviations in its measured value due to mask processing would NOT be cause for mask rejection. (This does not exempt mishandling of the data in pattern preparation from being a cause for mask rejection.)

8.1.71 CD_ISO_DENSE_TOLERANCE — Maximum acceptable difference of the mean of all measured customer-defined DENSE critical dimensions from the mean of all measured customer-defined ISOLATED critical dimensions.

8.1.72 CD_ISO_GROUP — Identifies a <cd_group> for use in iso/dense analysis. Data field must match data field of a START_CD in a <cd_group>. The <cd_group> must contain CD_MORPHOGRAPHY with data value ISOLATED.

8.1.73 CD_LOCATION — (x,y) Location of critical dimension feature. If CD_LOCATION appears in <mask_options>, then the (x,y) coordinates are relative to the nominal center of the mask (chrome side up). If CD_LOCATION appears in <pattern_options>, then the (x,y) coordinates are relative to the center of the pattern or cell, before mirroring or scaling. If CD_LOCATION appears in <mask_results>, then the (x,y) coordinates are relative to the nominal center of the mask (chrome side up), even if the original CD_LOCATION was in <pattern_options>.

8.1.74 CD_LOCATION_DRAWING — The uniquely identified (for each customer) document which shows the location of the CD structure.

8.1.75 CD_MATRIX_FILE_NAME — Alphanumeric name of file to be used for critical dimension measurement locations. It is not to be used in conjunction with CD_LOCATION within the same START_CD to END_CD set.

8.1.76 CD_MATRIX_FILE_FORMAT — (MF2, MF3, KMS and others on request)

8.1.77 CD_MEASURE_DIE — In combination with the associated <placement> definition, specifies the die to be used for CD measurement.

8.1.78 CD_MEASUREMENT_DATE — Date CD measurement was made.

8.1.79 CD_MORPHOGRAPHY — (DENSE, ISOLATED and others on request) Feature density surrounding CD location.

8.1.80 CD_ORIENTATION — (VERTICAL or HORIZONTAL) Direction in which the CD feature is to be scanned for measurement. In other words, a HORIZONTAL CD is scanned in the X direction (left to right), and a VERTICAL CD is scanned in the Y direction (top to bottom).

8.1.81 CD_PERCENT_CLEAR — Calculated percentage of clear area within CD_PERCENT_CLEAR_WINDOW in the mask data.

8.1.82 CD_PERCENT_CLEAR_WINDOW — (x1,y1,x2,y2) window coordinates over which CD_PERCENT_CLEAR is calculated, relative to the nominal center of the mask.

8.1.83 CD_PITCH — Local spacing of the critical dimension from the center of the geometry to the center of adjacent geometries. This will be designated by the customer as required and reported in <mask_results> for analysis by the customer.

8.1.84 CD_QUALITY_ID — (text) Customer's label for a collection of CD quality specifications, to be used only in addition to explicit quality requirement keywords. This may be used in the data structure in addition to, but not in place of, explicit quality requirement keywords. This may not be used in combination with QUALITY_GROUP_ID. Customer and vendor should document the meaning of this quality grade before using it in SEMI P10.

8.1.85 CD_RANGE — Maximum acceptable variation of all measured critical dimensions of same nominal size, same tone and same orientation, relative to each other. (See Related Information 1 at the end of this standard.)

8.1.86 CD_REFERENCE_ONLY — (T or F) If T, indicates that the CD location, <cd_group> or <cd_set> is to be measured and the data transmitted to the customer (if requested by SHIP_CD_DATA_), but that deviations in its measured value due to mask processing would NOT be cause for mask rejection. (This does not exempt mishandling of the data in pattern preparation from being a cause for mask rejection.)

8.1.87 CD_SITE_ID — Unique alphanumeric identifier of each critical dimension location within MASK_SET_ID to identify individual cd locations when using <mask_results>. If the same coordinates apply to locations on different masks within the mask set, they may have the same CD_SITE_ID, but it is not mandatory.   If CD_SITE_ID is used with a CD_LOCATION within a <pattern_options>, it will be associated with as many mask locations as the cell has instances. (See MEASURED_CD_SITE_ID for more information.)

8.1.88 CD_STD — (NBS, NIST, ROGER_SHERMAN, CUSTOMER, and others on request) reference standard to be used to correlate critical dimension measurements.

8.1.89 CD_TARGET — Desired final size of critical dimension feature on mask. (See Related Information 1 at the end of this standard.)

8.1.90 CD_THREE_SIGMA — Maximum acceptable 3-sigma deviation of all measured critical dimensions to the mean of all measured critical dimensions. (See Related Information 1 at the end of this standard.)

8.1.91 CD_TOLERANCE — Maximum acceptable deviation of the mean of all measured critical dimensions to the CD_TARGET. (See Related Information 1 at the end of this standard.)

8.1.92 CD_TONE_CLEAR — (T or F) If T, critical dimension feature on mask is clear.

8.1.93 CD_VERTICAL_ID — CD_SITE_ID of CD_VERTICAL_ID.

8.1.94 CD_VERTICAL_LOCATION — (x,y) Location of critical dimension feature. The CD_ORIENTATION of the feature must be VERTICAL.   If CD_VERTICAL_LOCATION appears in <mask_options>, then the (x,y) coordinates are relative to the nominal center of the mask (chrome side up). If CD_VERTICAL_LOCATION appears in <pattern_options>, then the (x,y) coordinates are relative to the center of the pattern or cell, before mirroring or scaling. If CD_VERTICAL_LOCATION appears in <mask_results>, then the (x,y) coordinates are relative to the nominal center of the mask (chrome side up), even if the original CD_VERTICAL_LOCATION was in <pattern_options>.

8.1.95 CD_VERTICAL_MORPHOGRAPHY — CD_MORPHOGRAPHY of the individual CD_VERTICAL_ID feature.

8.1.96 CD_VERTICAL_TONE_CLEAR — CD_TONE_CLEAR of the individual CD_VERTICAL_ID feature.

8.1.97 CD_X_GROUP — Identifies a <cd_group> for use in comparing horizontally scanned critical dimensions to a vertically scanned critical dimensions. Data field must match data field of a START_CD in a <cd_group>. The <cd_group> must contain CD_ORIENTATION with data value HORIZONTAL.

8.1.98 CD_Y_GROUP — Identifies a <cd_group> for use in comparing horizontally scanned critical dimensions to a vertically scanned critical dimensions. Data field must match data field of a START_CD in a <cd_group>. The <cd_group> must contain CD_ORIENTATION with data value VERTICAL.

8.1.99 CD_XY_DEVIATION — Maximum deviation, on a site-by-site basis, of a horizontally scanned critical dimension to a vertically scanned critical dimension within a <cd_xy_definition>. The two critical dimensions at each <cd_xy_site> site must be the same size in the pattern data and the same tone on the mask. (See Related Information 1 at the end of this standard.)

8.1.100 CD_XY_REFERENCE_ONLY — (T or F) If T, indicates that the <cd_xy_definition> is to be measured and the data transmitted to the customer (if requested by SHIP_CD_DATA), but that deviations in its measured value due to mask processing would NOT be cause for mask rejection. (This does not exempt mishandling of the data in pattern preparation from being a cause for mask rejection.)

8.1.101 CD_XY_TOLERANCE — Maximum acceptable deviation of the mean of all measured horizontally scanned critical dimensions to the mean of all measured vertically scanned critical dimensions within a <cd_xy_definition> and/or between the sites in {CD_X_GROUP} and the sites in {CD_Y_GROUP}. Critical dimensions at all sites must be the same size in the pattern data and the same tone on the mask. (See Related Information 1 at the end of this standard.)

8.1.102 CELL_ID — Name of the cell which follows; must be used in all references within this MASK_SET_ID to this cell definition.

8.1.103 CELL_INSTANCE — (text) Identifies CELL_ID to be placed by the following location information.

8.1.104 CELL_REGISTR_MARK — (x,y) Location of registration reference mark in <mask_order> data, relative to center of the cell (before mirroring or scaling).

8.1.105 CENTRALITY — (x,y,rotation) Maximum misplacement in millimeters and, optionally, microradians of all patterns as a group, relative to the nominal center of the mask.

8.1.106 CHECKSUM — For <mask_order>, an ASCII 16 bit crc checksum encompassing all records from START_ORDER through END_ORDER, inclusive. For <mask_results>, an ASCII 16 bit crc checksum encompassing all records from START_MASK_RESULTS through END_MASK_RESULTS, inclusive. (See COMPUTING THE CHECKSUM, §9.)

8.1.107 CLEAR_INTERNAL_WINDOW — (x1,y1,x2,y2) Area to have all digitized data removed within the window described by (x1,y1,x2,y2), relative to the coordinate space of DATA_SOURCE_FILE. The extents of the output pattern file will be the same as DATA_SOURCE_FILE.

8.1.108 COAT_DATE_TIME – (date) The date and time that the coating was applied by the mask vendor.

8.1.109 COAT_EQUIP_USED – (text) The model identification of the equipment used by the mask vendor to apply the coating.

8.1.110 COATING_COMPOSITION – (text) The name used to identify the composition of the coating, for example IP3500, MoSi, AR3, etc., as specified by the mask blank vendor if MASK_VENDOR_APPLIED = F, or mask vendor if MASK_VENDOR_APPLIED = T.

8.1.111 COATING_GRADE — Supplier grade of MASK_COATING applied to the substrate to build the photomask. Text to be agreed by customer/vendor to suit the specific requirement.

8.1.112 COATING_LOT_NUMBER — (text) The lot number supplied by the mask blank vendor for a particular coating such as the photoresist. Also known as "Resist Lot" or "Bake Lot".

8.1.113 COATING_MASK_VENDOR_APPLIED — (T or F) If T, the coating was applied by the mask vendor.

8.1.114 COATING_OPTICAL_DENSITY — (number) A measure of the transmittance through the given coating as specified by the mask blank vendor if MASK_VENDOR_APPLIED = F, or mask vendor if MASK_VENDOR_APPLIED = T. Optical density equals the log to the base 10 of the reciprocal of the transmittance

8.1.115 COATING_PHASE — (number) The angle in degrees that light is shifted by the given coating as specified by the mask blank vendor if MASK_VENDOR_APPLIED = F, or mask vendor if MASK_VENDOR_APPLIED = T.

8.1.116 COATING_REFLECTANCE — (number) For a given coating, the ratio of the reflected flux to the incident flux expressed as a percent, as specified by the mask blank vendor if MASK_VENDOR_APPLIED = F, or mask vendor if MASK_VENDOR_APPLIED = T.

8.1.117 COATING_THICKNESS — (number) The thickness of the coating in Angstroms as specified by the mask blank vendor if MASK_VENDOR_APPLIED = F, or mask vendor if MASK_VENDOR_APPLIED = T.

8.1.118 COATING_TRANSMITTANCE — (number) The ratio of the radiant power transmitted by the coating to the incident radiant power expressed as a percent, as specified by the mask blank vendor if MASK_VENDOR_APPLIED = F, or mask vendor if MASK_VENDOR_APPLIED = T.

8.1.119 COATING_TYPE – (CHROME, RESIST, ATTENUATOR) The name used to identify the category of coating being described.

8.1.120 COATING_WAVELENGTH — (number) The wavelength of light in nanometers with which the given coating is intended to be used as specified by the mask blank vendor if MASK_VENDOR_APPLIED = F, or mask vendor if MASK_VENDOR_APPLIED = T.

8.1.121 COMPACT_LABEL — Identification of customer-supplied label to use on shipping compact.

8.1.122 CUSTOMER — The name of the company placing the order.

8.1.123 CUSTOMER_SPEC – (text) Customer's designation for a specific mask manufacturing specification. CUSTOMER_SPEC may be used in the data structure in addition to, but not in place of, explicit quality requirement keywords.

8.1.124 CUSTOMER_SPEC_REVISION — (text) Customer designation of the revision of CUSTOMER_SPEC to be used. This must be explicit and may not default to "latest" or "last used". "None" is acceptable if no revision identification applies to the specification. Both CUSTOMER_SPEC and CUSTOMER_SPEC_REVISION are required if either appears at any level in the hierarchy.

8.1.125 DARK_INTERNAL_WINDOW — (x1,y1,x2,y2) Area to completely digitize within the window described by (x1,y1,x2,y2), relative to the coordinate space of DATA_SOURCE_FILE. The extents of the output pattern file will be the same as the DATA_SOURCE_FILE.

8.1.126 DATA_CHECKSUM — (integer) To be used to verify integrity of transmitted data.

8.1.127 DATA_CHECKSUM_TYPE — (text) Algorithm used to generate DATA_CHECKSUM.

8.1.128 DATA_COMPRESSION — (ZIP, ZOO, GZIP, Z, NONE, BINHEX) Compression algorithm used for transmitted data.

8.1.129 DATA_CONSOLIDATION — (BACKUP, TAR, GNUTAR, ZIP, NONE Consolidation method used for transmitted data.

8.1.130 DATA_DENSITY — (800BPI, 1600BPI or 6250BPI for 9_TRACK_-TAPE DATA_MEDIUM; HIGH or LOW for 4MM_DAT or 8MM_DAT DATA_MEDIUM) for magnetic tape density.

8.1.131 DATA_ENCRYPTION — (PGP, NETWIZARD, USER, HARDWARE, NONE) Encryption algorithm used for transmitted data.

8.1.132 DATA_FILE_NUMBER — For GDS-II OASIS, Mann or Electromask data, this is the file number on the physical medium.

8.1.133 DATA_FILE_SIZE — Size of the file in bytes.

8.1.134 DATA_FORMAT — (MEBES, RDOS = RDOS dump, VAX = VAX backup, GDS-II = GDS-II stream, OASIS = Specification for Open Artwork System Interchange Standard, CIF = Cal Tech Intermediate Format, DXF = Autocad output, APPLICON, MANN_3000, MANN_3600, ELECTROMASK, DOS, UNIX, APPLE, TAR, and others on request) Physical medium format.

8.1.135 DATA_FUNCTION_PURPOSE — (OPC, PSM, OPC/PSM, DRC, MRC, LVS, LOGICAL, FRACTURE, OTHER, and additional specific functions on request) Description of software function to be performed.

8.1.136 DATA_ID — The required identifying "name" for a physical volume of data. The name must match the label visible on the outside of the volume and must be unique among all physical volume names sent by a customer to a vendor.

8.1.137 DATA_JOB_NAME — For E-beam data, this is the name of the job file to be expected in DATA MEDIUM.

8.1.138 DATA_LAYER_ID — (Layer1;Datatype1[,Layer2;Datatype2,…]) Within DATA_TOP_CELL, a numeric pair of layer number and layer datatype separated by a semicolon and multiple sets of layers/datatypes separated by a comma. If no datatype is specified for a layer number, then all data datatypes are assumed to be included for that layer.

8.1.139 DATA_LOCATION — (text) Site where the data file may be found.

8.1.140 DATA_MEDIUM — (9_TRACK_TAPE, 4MM_DAT, 8MM_DAT, 1/4_INCH_CARTRIDGE, MODEM, FLOPPY, EMAIL, VPN, FTP, RCP, CDR, CDRW, HARDDRIVE, ZIPDRIVE, JAZZDRIVE, FLOPPY100MB, DERIVED) Data transfer medium used for delivering pattern files, fracture files, job files and measure files. DERIVED indicates files which are the result of <data_manipulation> operations contained within the <mask_order>.

8.1.141 DATA_OFFSET — For optical masks only, the (x,y) shift to be applied to the data in building the mask.

8.1.142 DATA_PATTERN_NAME — The textual name of a pattern file, either received from the customer or generated by <data_manipulation>. If the pattern received from the customer is a numbered file in a data volume, this is the pattern name to be applied to the file specified by the succeeding DATA_FILE_NUMBER and/or DATA_TOP_CELL and/or DATA_LAYER_ID. It may be used as input to <data_manipulation> if referenced by DATA_SOURCE_FILE to generate a new (different) DATA_PATTERN_NAME, or it may be used to identify a pattern to be written on the mask if referenced by PATTERN_NAME in <pattern_definition>.

8.1.143 DATA_PATTERN_WINDOW — (x1,y1,x2,y2) Establishes the extents of the pattern file in the coordinate space as received in DATA_SOURCE_FILE. (x1,y1) identifies the lower-left corner; (x2,y2) identifies the upper-right corner.

8.1.144 DATA_SCALE_FACTOR — (n) (De)Magnifying factor to be used in (de)magnifying both the geometries and the overall pattern file extents of the current data source.

8.1.145 DATA_SOURCE_FILE — A file provided by the customer to be used in a Boolean fracturing operation, or file resulting from a <data_manipulation> operation. It must match either a START_DATA_MANIPULATION or a DATA_PATTERN_NAME defined earlier in the <mask_order>.

8.1.146 DATA_TOP_CELL — Top cell or structure of the design.

8.1.147 DATABASE_AREA — (x1,y1,x2,y2) Unscaled, unmirrored coordinates of the window for database inspection, lower left and upper right corners, relative to the center and coordinate system of the pattern or cell or, if a <mask_option>, relative to the nominal center of the mask (chrome side up), after scaling and mirroring.

8.1.148 DATABASE_FILE_NAME — Name of database file to use for database inspection.

8.1.149 DATABASE_INSPECTION — (T or F) If T, database inspection is required.

8.1.150 DATABASE_JOB_LEVEL — Mask level of customer-supplied job file to use for database inspection.

8.1.151 DATABASE_JOB_NAME — Customer-supplied job file to use for database inspection. Should be omitted if customer does not supply job file.

8.1.152 DATABASE_LAYER — (Layer1;Datatype1[,Layer2;Datatype2,…]) Within DATABASE_TOP_CELL, a numeric pair of layer number and layer datatype separated by a semicolon and multiple sets of layers/datatypes separated by a comma. If no datatype is specified for a layer number, then all data datatypes are assumed to be included for that layer. To be used if DATABASE_SOURCE is GDS-II or OASIS.

8.1.153 DATABASE_SOURCE — (MEBES, PG, GDS-II, OASIS, KLARIS, UNDERIVED, and others on request) Data source to be used when database inspection is required. KLARIS indicates that KLARIS data was supplied by the customer. UNDERIVED indicates the customer-supplied data prior to vendor-performed data manipulation is to be used to produce the inspection data. GDS-II or OASIS indicates that the GDS-II or OASIS data is being supplied for database inspection, in addition to the customer-supplied MEBES or PG data to be used to write the mask.

8.1.154 DATABASE_TOP_CELL — Top cell to be used if DATABASE_SOURCE is GDS-II or OASIS.

8.1.155 DATABASE_UNIT — Grid size to be used for fracturing DATABASE_SOURCE into inspection data, as required by some inspection systems.

8.1.156 DATABASE_WITH_JOB — (T OR F) Database inspection must use job file (DATABASE_JOB_NAME and DATABASE_JOB_LEVEL if supplied by customer) to consolidate pattern files.

8.1.157 DEFECT_COUNT — Integer maximum allowable number of defects within the INSPECTION_AREA.

8.1.158 DEFECT_COUNT_REP — Integer maximum number of repeating defects within the INSPECTION_AREA.

8.1.159 DEFECT_DENSITY — Maximum allowable number of defects per square centimeter within the INSPECTION_AREA.

8.1.160 DEFECT_EQUIP_REQD — Alphanumeric identification of acceptable equipment for defect inspection.

8.1.161 DEFECT_EQUIP_USED — Defect inspection equipment used.

8.1.162 DEFECT_INSP_DATE — DEFECT inspection date.

8.1.163 DEFECT_INSP_MODE_REQD — Alphanumeric operating mode for DEFECT_EQUIP_REQD.

8.1.164 DEFECT_INSP_MODE_USED — (text) DEFECT_EQUIP_USED operating mode.

8.1.165 DEFECT_INSP_PIXEL_SIZE_REQD — Pixel size used by DEFECT_EQUIP_REQD.

8.1.166 DEFECT_INSP_PIXEL_SIZE_USED — Pixel size used by DEFECT_EQUIP_USED.

8.1.167 DEFECT_INSP_SENSITIVITY_REQD — Sensitivity to be used by DEFECT_EQUIP_REQD.

8.1.168 DEFECT_INSP_SENSITIVITY_USED — Sensitivity used by DEFECT_EQUIP_USED.

8.1.169 DEFECT_QUALITY_ID — (text) Customer's for a collection of defect quality specifications, to be used only in addition to explicit quality requirement keywords. This may be used in the data structure in addition to, but not in place of, explicit quality requirement keywords. This may not be used in combination with QUALITY_GROUP_ID. Customer and vendor should document the meaning of this quality grade before using it in SEMI P10.

8.1.170 DEFECT_SETUP_FILE_NAME_REQD — Alphanumeric name of setup file for DEFECT_EQUIP_REQD.

8.1.171 DEFECT_SETUP_FILE_NAME_USED — Alphanumeric name of setup file for DEFECT_EQUIP_USED.

8.1.172 DEFECT_SIZE — Maximum dimension of smallest unacceptable defect—all types.

8.1.173 DEFECT_SIZE_CL — Maximum dimension of smallest unacceptable clear defect.

8.1.174 DEFECT_SIZE_CL_ADJ — Maximum dimension of smallest unacceptable clear, non-repeating edge defect.

8.1.175 DEFECT_SIZE_CL_ADJ_REP — Maximum dimension of smallest unacceptable clear, repeating edge defect.

8.1.176 DEFECT_SIZE_CL_ISO — Maximum dimension of smallest unacceptable clear, repeating isolated defect.

8.1.177 DEFECT_SIZE_CL_ISO_REP — Maximum dimension of smallest unacceptable clear, non-repeating isolated defect.

8.1.178 DEFECT_SIZE_DK — Maximum dimension of smallest unacceptable dark defect.

8.1.179 DEFECT_SIZE_DK_ADJ — Maximum dimension of smallest unacceptable dark, non-repeating edge defect.

8.1.180 DEFECT_SIZE_DK_ADJ_REP — Maximum dimension of smallest unacceptable dark, repeating edge defect.

8.1.181 DEFECT_SIZE_DK_ISO — Maximum dimension of smallest unacceptable dark, non-repeating isolated defect.

8.1.182 DEFECT_SIZE_DK_ISO_REP — Maximum dimension of smallest unacceptable dark, repeating isolated defect.

8.1.183 DEFECT_TYPE — (PINHOLE, EDGE, PINDOT, CD, SEMI_TRANS, MASSIVE, CLIPPED, PATTERN, REFL_PATTERN, PAT_PINHOLE, REFL_PINHOLE, CORNER, LINE_END, BASIC, ISO, MID_SIZE and others on request) Setup parameter for defect inspection.

8.1.184 DEFECTIVE_DIE_DENSITY — Maximum allowable number of die with defects per square centimeter within the INSPECTION_AREA.

8.1.185 DEFECTIVE_DIE_COUNT — Integer maximum allowable number of die with defects within the INSPECTION_AREA.

8.1.186 DEFECTIVE_DIE_COUNT_REP — Integer maximum number of repeating defective die within the INSPECTION_AREA.

8.1.187 DELIVERABLE_MASK — (T or F) If F, the mask is to be held internally by the mask shop for the production of other deliverable masks. For a MASK_ID with MULTIWRITE, only the final write and process step MASK_ID within the multiwrite group may have DELIVERABLE_MASK = T.

8.1.188 DELIVERY_PRIORITY — Alphanumeric text, to be agreed between the customer and supplier, describing urgency for delivery (e.g., rush, standard, slow).

8.1.189 DESIGN_RULE — Numeric data field indicates the nominal minimum dimension of wafer geometries.

8.1.190 DIE_TO_DIE_INSPECTION — (T or F) If T, die-to-die inspection is required.

8.1.191 DIE_TO_DIE_MEASUREMENTS – (T or F) If T, indicates that the defect inspection performed was die-to-die. If F, indicates defect inspection performed was die-to-database.

8.1.192 DIGITIZED_DATA_DARK — (T or F) If T, the image of digitized data is to be opaque on the mask. If F, the image of digitized data is to be clear.

8.1.193 DROPOUT — (x,y) Row and column of pattern or cell placement which is to be omitted in the array. These array coordinates are rectangular (even if the actual written array is non-rectangular), with the origin at the lower left of the array (chrome side up before mirroring).

8.1.194 DUE_DATE_TIME_COMMITTED — (date,time) For delivery (at customer) committed by vendor.

8.1.195 DUE_DATE_TIME_REQUESTED — (date,time) Requested for delivery (at customer).

8.1.196 DXF_ANGLE — (integer) To be used if DATA_FORMAT is DXF.

8.1.197 DXF_UNIT — (integer) To be used if DATA_FORMAT is DXF.

8.1.198 EDGE_ROUGHNESS — The (numeric) maximum value of edge roughness, based on physical measurements.

8.1.199 ELAPSED_TIME — Numeric hours between masking steps in the wafer fab. Used in conjunction with LAYER_PRIORITY, provides scheduled due dates based on the delivery of each previous mask. No mask may have both ELAPSED_TIME and DUE_DATE_REQUESTED. See LAYER_PRIORITY.

8.1.200 ELAPSED_TIME_COMMITTED — Numeric hours for delivery (at customer) committed by vendor.

8.1.201 ELAPSED_WRITE_TIME — (number) The total time in minutes that the given lithography operation took to write the mask.

8.1.202 EMAIL_ADDRESS — Internet address.

8.1.203 END_BARCODE — (text) must match data field of START_BARCODE.

8.1.204 END_BILLING_INFORMATION — (text) Indicates the end of the <billing_information> section. Must match data field of START_BILLING_INFORMATION.

8.1.205 END_CD — Alphanumeric data field must match data field of START_CD.

8.1.206 END_CD_GROUP_MEASUREMENTS — (text) must match data field of START_CD_GROUP_MEASUREMENTS.

8.1.207 END_CD_ISO_DENSE — (text) must match data field of START_CD_ISO_DENSE.

8.1.208 END_CD_ISO_DENSE_RESULTS — (text) must match data field of START_CD_ISO_DENSE_RESULTS

8.1.209 END_CD_MEASUREMENT — Alphanumeric data field must match data field of START_CD_MEASUREMENT.

8.1.210 END_CD_SET— Alphanumeric data field must match data field of START_CD_SET.

8.1.211 END_CD_SET_RESULTS — Alphanumeric data field must match data field of START_CD_SET_RESULTS.

8.1.212 END_CD_XY_DEFINITION — Alphanumeric data field must match data field of START_CD_XY_DEFINITION.

8.1.213 END_CD_XY_RESULTS — Alphanumeric data field must match data field of START_CD_XY_RESULTS.

8.1.214 END_CELL — Must match data field of CELL_ID for which data is complete.

8.1.215 END_CELL_INSTANCE — (text) must match data field of CELL_INSTANCE.

8.1.216 END_CELL_INSTANCE_OPTIONS — Must match data field of CELL_INSTANCE for which pattern options are complete.

8.1.217 END_CELL_OPTIONS — Must match data field of CELL_ID for which options are complete.

8.1.218 END_CLOSURE_MEASUREMENTS — Must match START_CLOSURE_MEASUREMENTS data field.

8.1.219 END_COATING — (text) Indicates the end of the <coating> section. Must match START_COATING data field.

8.1.220 END_DATA_FRACTURE — Must match START_DATA_FRACTURE data field.

8.1.221 END_DATA_FUNCTION — Must match START_DATA_FRACTURE data field.

8.1.222 END_DATA_MANIPULATION — (text) must match data field of START_DATA_MANIPULATION.

8.1.223 END_DATA_MEDIUM — Must match data field of DATA_MEDIUM for which data is complete.

8.1.224 END_DATA_PATTERN_NAME — Must match data field of DATA_PATTERN_NAME.

8.1.225 END_DATA_SOURCE_FILE — Must match DATA_SOURCE_FILE data field.

8.1.226 END_DEFECT_DEFINITION — (text) must match data field of START_DEFECT_DEFINITION

8.1.227 END_DEFECT_MEASUREMENTS — (text) must match data field of START_DEFECT_MEASUREMENTS.

8.1.228 END_ETCH_DEPTH_MEASUREMENTS — Must match START_ETCH_DEPTH_MEASUREMENTS data field.

8.1.229 END_FTP_HOST — Must match data field of FTP_HOST_NAME.

8.1.230 END_LITHO_INFORMATION — Alphanumeric data field must match data field of START_LITHO_INFORMATION.

8.1.231 END_MASK — Must match data field of MASK_ID for which data is complete.

8.1.232 END_MASK_GROUP — Must match data field of MASK_GROUP_ID for which data is complete.

8.1.233 END_MASK_GROUP_OPTIONS — Must match data field of MASK_GROUP_ID for which options are complete.

8.1.234 END_MASK_RESULTS — Must match START_MASK_RESULTS data field.

8.1.235 END_MASK_RESULTS_OPTIONS — Alphanumeric data field must match data field of START_MASK_RESULTS_OPTIONS

8.1.236 END_MASK_SET — Must match data field of MASK_SET_ID for which data is complete.

8.1.237 END_MASK_SET_OPTIONS — Must match data field of MASK_SET_ID for which options are complete.

8.1.238 END_MATERIALS_USED — Alphanumeric data field must match data field of START_MATERIALS_USED.

8.1.239 END_MEASURED_ETCH_DEPTH_SITE — Must match data field of MEASURED_ETCH_DEPTH_MARK_SITE_ID.

8.1.240 END_MEASURED_PHASE_ANGLE_SITE — Must match data field of MEASURED_PHASE_ANGLE_MARK_SITE_ID.

8.1.241 END_MEASURED_REGISTR_MARK — Must match data field of MEASURED_REGISTR_MARK_ID.

8.1.242 END_MEASURED_TRANSMISSION_SITE — Must match data field of MEASURED_TRANSMISSION_MARK_SITE_ID.

8.1.243 END_OPC — Must match data field of START_OPC.

8.1.244 END_ORDER — Must match data field of START_ORDER for which data is complete.

8.1.245 END_PATTERN_DEFINITION — Must match data field of LEVEL_ID for which data is complete.

8.1.246 END_PATTERN_GROUP — Must match data field of PATTERN_GROUP_ID for which data is complete.

8.1.247 END_PATTERN_GROUP_INSTANCE — Must match data field of PATTERN_GROUP_INSTANCE.

8.1.248 END_PATTERN_GROUP_OPTIONS — Must match data field of PATTERN_GROUP_ID for which options are complete.

8.1.249 END_PATTERN_GROUP_RESULTS — Alphanumeric data field must match data field of START_PATTERN_GROUP_RESULTS.

8.1.250 END_PATTERN_OPTIONS — Must match data field of START_PATTERN_OPTIONS.

8.1.251 END_PHASE_ANGLE_MEASUREMENTS — Must match data field of START_PHASE_ANGLE_MEASUREMENTS.

8.1.252 END_PHASE_SHIFT — Must match START_PHASE_SHIFT data field.

8.1.253 END_PHASE_SHIFT_MEASUREMENTS — Must match data field of START_PHASE_SHIFT_MEASUREMENTS.

8.1.254 END_PLACEMENT — Must match data field of START_PLACEMENT.

8.1.255 END_REGISTR — Must match data field of START_REGISTR.

8.1.256 END_REGISTR_MEASUREMENTS — Must match data field of START_REGISTR_MEASUREMENTS.

8.1.257 END_REPAIR_DEFINITION — Must match data field of START_REPAIR_DEFINITION.

8.1.258 END_SEM_PHOTO — Must match START_SEM_PHOTO data field.

8.1.259 END_SHIP_FILM — Must match data field of SHIP_FILM.

8.1.260 END_SHIP_PLOT — Must match data field of START_SHIP_PLOT.

8.1.261 END_SHIP_TO — Must match data field of START_SHIP_TO.

8.1.262 END_SHIPPABLE_DATA — Must match data field of START_SHIPPABLE_DATA.

8.1.263 END_SUBSTRATE — Must match data field of START_SUBSTRATE.

8.1.264 END_SURFACE_DEFINITION — Must match data field of START_SURFACE_DEFINITION.

8.1.265 END_SURFACE_INSP_MEASUREMENTS — Must match data field of START_SURFACE_INSP_MEASUREMENTS.

8.1.266 END_TITLE — (title number) Indicates end of keywords for a specific title. Must match data field of START_TITLE for which data is complete.

8.1.267 END_TRANSMISSION_MEASUREMENTS — Must match data field of START_TRANSMISSION_MEASUREMENTS.

8.1.268 END_VENDOR_INFO — Must match data field of START_VENDOR_INFO.

8.1.269 ENGINEERING_ADDRESS — Address for delivery of shippable engineering data.

8.1.270 ENGINEERING_CONTACT — Name of person to contact for technical questions.

8.1.271 ENGINEERING_EMAIL — Internet address for ENGINEERING_CONTACT.

8.1.272 ENGINEERING_FAX — Phone number for facsimile machine of ENGINEERING_CONTACT.

8.1.273 ENGINEERING_PHONE — Phone number for ENGINEERING_CONTACT.

8.1.274 EQUIP_SITE_REQD — Alphanumeric identification of qualified manufacturing site, to be agreed between customer and vendor, for preceding required equipment. For a given MASK_ID, EQUIP_SITE_REQD may not be used in combination with MFG_SITE_REQD.

8.1.275 ESTIMATED_ARRIVAL — The date and time when the vendor predicts MASK_ID will be delivered to the customer, based on the MILESTONE most recently completed.

8.1.276 ESTIMATED_ARRIVALS — (T or F) If T, the vendor is requested to use <mask_results> to supply a prediction of the delivery date and time when MASK_ID will be delivered to the customer, based on the MILESTONE most recently completed. ESTIMATED_ARRIVAL will be transmitted each time <mask_results> is required by either MILESTONES or PERIODIC_UPDATES. If neither have been requested, then ESTIMATED_ARRIVAL should be transmitted daily.

8.1.277 ETCH_DEPTH_EQUIP_REQD — (text) Etch depth measurement equipment required by customer.

8.1.278 ETCH_DEPTH_EQUIP_USED — (text) Etch depth measurement equipment used.

8.1.279 ETCH_DEPTH_ERROR — Maximum allowable deviation (in angstroms) of any etch depth measurement from ETCH_DEPTH_TARGET.

8.1.280 ETCH_DEPTH_MARK_DRAWING — The uniquely identified (for each customer) document which shows the etching depth measurement mark structure itself, and may show the place(s) within the etching depth measurement mark which are to be measured.

8.1.281 ETCH_DEPTH_MARK_FEATURE — Text describing the feature to be used for phase etching depth measurement.

8.1.282 ETCH_DEPTH_MARK_LOCATION — (x,y) Location of etching depth measurement mark relative to the nominal center of the mask (chrome side up).

8.1.283 ETCH_DEPTH_MARK_LOCATION_DRAWING — The uniquely identified (for each customer) document which shows the location(s) of the etching depth measurement mark structure.

8.1.284 ETCH_DEPTH_MEASUREMENT_DATE — Etch depth measurement date.

8.1.285 ETCH_DEPTH_MEASUREMENT_FILE_NAME — Name of data file containing results of etch depth measurement.

8.1.286 ETCH_DEPTH_MODE_REQD — (text) operating mode required by customer for ETCH_DEPTH_EQUIP_USED.

8.1.287 ETCH_DEPTH_MODE_USED — (text) operating mode for ETCH_DEPTH_EQUIP_USED.

8.1.288 ETCH_DEPTH_SITE_ID — Unique alphanumeric identifier of each etch depth measurement location within MASK_SET_ID to identify individual locations when using <mask_results>. If the same coordinates apply to locations on different masks within the mask set, they may have the same ETCH_DEPTH_SITE_ID, but it is not mandatory.

8.1.289 ETCH_DEPTH_RANGE — Maximum acceptable variation (in angstroms) of all etch depth measurements, relative to each other.

8.1.290 ETCH_DEPTH_REFERENCE_ONLY — (T or F) If T, indicates that the etch depth feature is to be measured and the data transmitted to the customer (if requested by SHIP_PHASE_SHIFT_MEASUREMENTS), but that deviations in its measured value due to mask processing would NOT be cause for mask rejection.

8.1.291 ETCH_DEPTH_TARGET — Desired mean etch depth in angstroms.

8.1.292 ETCH_DEPTH_TOLERANCE — Maximum acceptable deviation (in angstroms) of the mean of all measured critical dimensions to the ETCH_DEPTH_TARGET.

8.1.293 EUV_ABSORBER_COMPOSITION (text) — Composition of the absorber stack of an EUV mask, to be agreed on between customer and supplier, as per SEMI P38.

8.1.294 EUV_ABSORBER_OPTICAL_PROPERTIES — Percentage of absorber reflectivity as defined in Table 11 OF SEMI P38.

8.1.295 EUV_BLANK_RESISTANCE (numeric) — Electrical resistance (in Ohms) measured between the surface of the absorber stack and the backside of the mask blank.

8.1.296 EUV_BLANK_TYPE — Type of EUV mask blank as defined in Table 1 of SEMI P38.

8.1.297 EUV_CAPPING_COMPOSITION (text) — Composition of capping layers on the multilayer stack of an EUV mask, to be agreed on between customer and supplier, as per SEMI P38.

8.1.298 EUV_EXPANSION_COEFF — Grade of coefficient of thermal expansion for EUV mask blank as defined in Table 3 of SEMI P37.

8.1.299 EUV_FLATNESS_BACK — Grade of flatness required for back side of EUV mask within flatness quality area as per Figure 3 and Table 4 of SEMI P37.

8.1.300 EUV_FLATNESS_FRONT — Grade of flatness required for front side of EUV mask within flatness quality area as per Figure 3 and Table 4 of SEMI P37.

8.1.301 EUV_MEAN_PEAK_REFLECTIVITY — Grade for percentage reflectivity of the EUV multilayer stack, as per Table 5 of SEMI P38.

8.1.302 EUV_MMR_WAVELENGTH (wavelength) — Wavelength in nanometers of the mean median reflected of the multilayer stack of an EUV mask, to be agreed on between customer and supplier, as per SEMI P38.

8.1.303 EUV_MULTILAYER_COMPOSITION (text) — Material composition of the multilayers of an EUV mask, to be agreed on between customer and supplier, as per SEMI P38.

8.1.304 EUV_PEAK_REFLECTIVITY_UNIFORMITY — Grade of reflectivity uniformity required per Table 6 of SEMI P38.

8.1.305 EWT_CEILING — (numeric) The maximum monetary amount that can be added to PRICE as an excess write time charge for the mask. If the charge calculated with EWT_RATE exceeds EWT_CEILING, then EWT_CEILING is used as the excess write time charge.

8.1.306 EWT_RATE — (numeric) The monetary amount per minute to be added to PRICE for write time exceeding the EWT_THRESHOLD time. The monetary unit is defined in PRICE_UNITS.

8.1.307 EWT_THRESHOLD — (numeric) The number of minutes that a mask can write before incurring an Excess Write Time (EWT) charge.

8.1.308 EXTERNAL_WINDOW — (x1,y1,x2,y2) Area to have all digitized data removed outside the window described by (x1,y1,x2,y2), relative to the coordinate space of DATA_SOURCE_FILE. The extents of the pattern file are thus defined by the window.

8.1.309 FAB_TECHNOLOGY – (text) Customer's designation for the fabrication unit's wafer manufacturing process

8.1.310 FIGURE_COUNT — Total number of geometries which are expected in the pattern file. If this is incorrect, the mask will not be written until it is corrected.

8.1.311 FILE_DATE_TIME — (x,y) Date and time of transmission of mask order. Format will be as in § 6.19.

8.1.312 FILM_COLOR — Color to be used for the mask film.

8.1.313 FILM_NORMAL_TONE — (T or F) If T, digitized data will be dark.

8.1.314 FILM_SCALE — Numeric scale of the film of the mask image.

8.1.315 FILM_SIZE — (x,y) Size in inches of the film.

8.1.316 FINAL_AUDIT_DATE_TIME – (date) The date and time of the finalquality audit prior to shipping the mask to the customer.

8.1.317 FINAL_QC_AUDITOR — (text) Mask supplier identification of final Quality Control auditor.

8.1.318 FRACTURE_FILE — Alphanumeric file name of fracture instructions provided by the customer with the mask order.

8.1.319 FRACTURE_FILE_FORMAT — Format of FRACTURE_FILE (CATS, K2, and others on request).

8.1.320 FRACTURING_SCALE — For optical data (Mann or Electromask) only, this is the scale factor to use in fracturing the data to E-beam format.

8.1.321 [FTP_DIRECTORY] — Name of target directory for FTP data.

8.1.322 FTP_HOST_NAME — Domain of the FTP host, either in the form n.n.n.n where n is an integer from 0 to 255, or in an equivalent text name if such is supported by the FTP site.

8.1.323 [FTP_LOGIN] — The login name for an FTP account. If an anonymous FTP is used, the data field will be "anonymous".

8.1.324 [FTP_MODE] — (ASCII, BINARY or AUTO) Data encoding type for FTP data. If absent, default is BINARY.

8.1.325 [FTP_PASSWORD] — Password for FTP account.

8.1.326 GOOD_FIELDS — Specifies the 1X reticle fields which must pass inspection criteria and is applied to the cells immediately instanced by the preceding CELL_ID. Fields are referenced by numbers assigned from left to right according to their position on the mask, chrome side up. For example, for a mask with 5 fields, the fields would be:

1 2 3 4 5

The required good fields are specified by any logical combination of field numbers, "AND", "OR", and parentheses. In the above example, "(1 OR 2) AND (3 OR 4) AND 5" would require that either 1 or 2 be good, and either 3 or 4 be good, and that 5 be good. No logical precedence is assumed; precedence is defined only by parentheses. This keyword applies only to 1X reticles.

8.1.327 GUIDES_REQD — (STANDARD, WIDE or BOTH) Applies to 1X reticles only.

8.1.328 INPUT_FILE_FORMAT — Format of INPUT_FILE_NAME.

8.1.329 INPUT_FILE_NAME — (text) Name identifying the input file for RUNSET_NAME. If this keyword appears in the <mask_order>, it must be explicitly referenced in a RUNSET_NAME and/or a PARAMETER_FILE_NAME.

8.1.330 INSP_DATABASE_DATA_FORMAT — Alphanumeric description of format for SHIP_INSP_DATABASE_DATA.

8.1.331 INSPECT_ALL_SITES — If T, all placements of patterns under this <cell_instance> or <pattern_instance> require in-spection, regardless of the number of inspection tool setups necessary to do so.

8.1.332 INSPECT_THROUGH_PELLICLE — (T or F) If T, the mask must be inspected through the pellicle and the <defect_definition> and <database_inspection> keywords to be used must follow the INSPECT_THROUGH_PELLICLE keyword. Unpelliclized inspection may be separately defined and would precede the INSPECT_THROUGH_PELLICLE keyword.

8.1.333 INSPECTION_AREA — (x1,y1,x2,y2) Unscaled coordinates of window for defect inspection, lower left and upper right corners, relative to the nominal center of mask, pattern or cell (chrome side up for masks, unmirrored for patterns or cells).

8.1.334 INSPECTION_AREA_EXCLUDE — (x1, y1, x2, y2) Unscaled coordinates of window to be excluded from defect inspection. This is commonly referred to as DNIR (Do Not Inspect Region). (See INSPECTION_AREA.)

8.1.335 INSPECTION_REF_LOCATION — (x,y) Location of reference mark for defect inspection, relative to the nominal center of the substrate (chrome side up).

8.1.336 INSPECTION_SETUP_FILENAME — Alphanumeric name of setup file for defect inspection equipment.

8.1.337 JOB_ONLY_APPROVAL_REQD — (T or F) Explicit approval of the mask writing control file must be given by the customer before the mask is to be written or further processed.

8.1.338 JOB_ONLY_APPROVED — Date approval was granted by customer for JOB_ONLY_APPROVAL_REQD.

8.1.339 JOB_WITH_PATTERNS_APPROVAL_REQD — (T or F) Explicit approval of the mask writing control file and all referenced pattern files must be given by the customer before the mask is to be written or further processed.

8.1.340 JOB_WITH_PATTERNS_APPROVED — Date approval was granted by customer for JOB_WITH_PATTERNS_APPROVAL_REQD.

8.1.341 JOB_FORMAT — (MEBES, EEBES, ATEQ, and others on request) Format of preceding JOB NAME.

8.1.342 JOB_LEVEL — Level of preceding JOB_NAME to be used to make mask.

8.1.343 JOB_NAME — Name of job file to be used to make mask(s).

8.1.344 LAYER_PRIORITY — Sequence number in which masks are needed. Together with ELAPSED_TIME determines the mask delivery schedule. The first mask (LAYER_PRIORITY=1) is due within its ELAPSED_TIME from the time it is ordered or released; the second mask is due within its ELAPSED_TIME from when the first mask was due, or from when the first mask was delivered, whichever is later; and so on.

8.1.345 LEVEL_ID — Numerical indicator of which masks within the mask set will include this pattern. When a MASK_ID in a MASK_GROUP, which references this PATTERN_GROUP_ID, matches this LEVEL_ID, this pattern will appear on the mask. When LEVEL_ID is "A", the pattern will appear on all masks which reference the pattern group. A given LEVEL_ID value may appear only once in any pattern group. Appearance of "A" as a LEVEL_ID value precludes any other patterns from the pattern group.

8.1.346 LINE_ITEM_NUMBER — Integer line item number relative to PO_NUMBER.

8.1.347 LITHO_EQUIP_REQD — (EBEAM, OPTICAL, LASER) Acceptable equipment for writing product mask(s).

8.1.348 LITHO_EQUIP_USED — Type of equipment used for writing product mask(s). See LITHO_EQUIP_REQD.

8.1.349 LITHO_MODE_REQD — (SPP,MPP,VA,4PASS,8PASS,1000UM, and others on request.) Acceptable recipe for LITHO_EQUIP_REQD.

8.1.350 LITHO_MODE_USED — The writing methodology used by the lithography tool.

8.1.351 LITHO_MODEL_REQD — (ALTA_3000, ALTA_3500, ALTA_3700, ALTA_4300, CORE_2000, CORE_2100, CORE_2500, CORE_2564, EBM_3500, EBM_4000, HL_800, HL_900, HL_950, HL_7000, JBX_3030, JBX_7000, JBX_9000, LRS_55, LRS_800, MANN_3000, MANN_3600, MANN_3696, MEBES III, MEBES IV, MEBES_4000, MEBES_4500, MEBES_4700, MEBES_5000, MEBES_5500, MEBES_EXARA, MM_101, MP_508, OMEGA_6600, SIGMA_7100, SIGMA_7300, TAMARACK_142, TAMARACK_155, TOSHIBA_4700, TRE_220, ULTRABEAM_V2000, ZBA_21, ZBA_23H, ZBA_31, ZBA_31H+, ZBA_320, ZBA_340, and others on request) Model of acceptable mask writing equipment.

8.1.352 LITHO_MODEL_USED — The model name of the lithography tool used to perform the lithography operation. See LITHO_MODEL_REQD.

8.1.353 LOCATION — (x,y) Location of the center of the initial pattern or cell, relative to center of the preceding CELL_ID (before mirroring or scaling).

8.1.354 LOCATION_SPEC — Alphanumeric identification of customer-supplied specification for pattern or cell placement.

8.1.355 LOG_FILE_NAME— (text) Name identifying the log output file for RUNSET_NAME. If this keyword appears in the <mask_order>, it must be explicitly referenced in a RUNSET_NAME and/or a PARAMETER_FILE_NAME.

8.1.356 MACHINE_SERIAL_NUMBER — (text) The serial number of the lithography tool used to perform the lithography operation.

8.1.357 MAILING_ADDRESS — Postal address.

8.1.358 MASK_COATING — (HIGH_REFLECTIVE_CHROME, MEDIUM_REFLECTIVE_CHROME, LOW_REFLECTIVE_CHROME, SEE_THROUGH_CHROME, IRON_OXIDE, CHROME_OXIDE, EMULSION) or in the case of other coatings, an alphanumeric description. (See SEMI P2.)

8.1.359 MASK_GROUP_ID — Name of the mask group which follows; must be used in all references within this MASK_SET_ID to this mask group.

8.1.360 MASK_ID — Unique integer identifier of each mask within mask set. All patterns referenced by the MASK_GROUP_ID's PLACEMENT_TOP_CELL whose LEVEL_ID's match this MASK_ID will appear on the mask. When LEVEL_ID is "A", the pattern will appear on all masks whose PLACEMENT_-TOP_CELL references the pattern group.

8.1.361 MASK_NAME — Name used by customer for mask, to be used to cross-reference MASK_ID to customer's internal tracking system. This is primarily for the customer's use only, but should be recorded by the vendor and reported back in <mask_results>.

8.1.362 MASK_REGISTR_MARK — (x,y) Location of registration reference mark in <mask_order>, relative to the nominal center of substrate (chrome side up).

8.1.363 MASK_REGISTR_MARK_LOCATION — (x,y) Location of individual registration mark, relative to nominal center of substrate (chrome side up), based on <mask_order> information. This is the target location for the mark, reflected in <mask_results>.

8.1.364 MASK_ROTATION — (0, 90, 180 and 270) Degrees to rotate the entire set of mask data (patterns, titles, barcodes, etc.) counterclockwise (assuming a chrome-up orientation).

8.1.365 MASK_SERIAL_NUMBER — (alphanumeric) The serial number title written on the mask during lithography - usually numeric, but alphanumeric if agreed by customer and vendor.

8.1.366 MASK_SET_ID — The "name" of the mask set, often the device name or number. This must be used in all future references to this mask set and must be unique among mask sets ordered by the customer.

8.1.367 MASK_SET_NAME — Name used by customer for mask set, to be used to cross-reference MASK_SET_ID to customer's internal tracking system. This is primarily for the customer's use only, but should be recorded by the vendor and reported back in <mask_results>.

8.1.368 MASK_SET_VERSION — Name used by customer for versions of the mask set, to be used to cross-reference MASK_SET_ID to customer's internal tracking system. This is primarily for the customer's use only, but should be recorded by the vendor and reported back in <mask_results>.

8.1.369 MASK_SHIPPED_DATE_TIME – (date) The date and time the mask left the mask shop for delivery to the customer.

8.1.370 MAX_MASKS_IN_PACKAGE — Integer maximum number of masks to be shipped inside PACKAGE.

8.1.371 MEASURE_FILE_FORMAT — (MF2, MF3, MTX, IMP, and others on request.)

8.1.372 MEASURE_FILE_NAME — Alphanumeric name of file to be used for registration mark locations. When MEASURE_FILE_NAME follows MASK_REGISTR_MARK or CELL_REGISTR_MARK, the mark locates the origin of the measure file. When in <mask_options> or in <pattern_options>, MEASURE_FILE_NAME must follow either MASK_REGISTR_MARK or CELL_REGISTR_MARK.

8.1.373 MEASURED_CD — The critical dimension measurement at the CD_LOCATION, as measured by the vendor.

8.1.374 MEASURED_CD_DENSE_MEAN — Average of all measured dense CD features.

8.1.375 MEASURED_CD_DENSE_RANGE — CD_RANGE of the dense features on the mask as measured by the vendor.

8.1.376 MEASURED_CD_DEVIATION_FROM_MEAN — (n, m) For all measurements in the associated <measured_cd_results> section, the difference (n) between the maximum measurement and the mean, and the difference (m) between the mean and the minimum measurement. "n" will always be positive; "m" will always be negative.

8.1.377 MEASURED_CD_DEVIATION_FROM_TARGET — (numeric) CD_DEVIATION_FROM_TARGET of the mask as measured by the vendor. This is the largest single deviation of all measurement points from the specified target. If the largest deviation is for a CD larger than the target, then the value will be positive; if the largest deviation is for a CD smaller than the target, then the value will be negative.

8.1.378 MEASURED_CD_FILE_NAME — Name of data file containing results of CD measurement.

8.1.379 MEASURED_CD_ISO_DENSE_TOLERANCE — CD_ISO_DENSE_TOLERANCE of the mask as measured by the vendor. The mean of the ISOLATED critical dimensions should always be subtracted from the mean of the DENSE critical dimensions.

8.1.380 MEASURED_CD_ISO_MEAN — Average of all measured isolated CD features.

8.1.381 MEASURED_CD_ISO_RANGE — CD_RANGE of the isolated features on the mask as measured by the vendor.

8.1.382 MEASURED_CD_LOCATION — (x,y) The actual location, relative to the nominal center of the mask, of the critical dimension as measured by the vendor.

8.1.383 MEASURED_CD_MAX — (number) For the associated <cd_group> or <cd_set>, the maximum of all measurements.

8.1.384 MEASURED_CD_MEAN — (number) For the associated <cd_group> or <cd_set>, the mean of all measurements.

8.1.385 MEASURED_CD_MIN — (number) For the associated <cd_group> or <cd_set>, the minimum of all measurements.

8.1.386 MEASURED_CD_RANGE — (number) CD_RANGE of the mask as measured by the vendor. For the associated <cd_group> or <cd_set>, this is the difference between the maximum measurement and the minimum measurement.

8.1.387 MEASURED_CD_SITE_ID — Must match CD_SITE_ID in <mask_order> for site being measured. If the customer assigned no CD_SITE_ID for the required location (e.g., only CD_LOCATION_DRAWING was used), the vendor will assign a MEASURED_CD_SITE_ID for each measurement location so that it is unique within the MASK_SET_ID. If CD_SITE_ID was used as a <pattern_options> in <mask_order> for a pattern with multiple

instances, then the vendor will add a suffix to CD_SITE_ID for each instance so that each MEASURED_CD_SITE_ID in <mask_results> will be unique.

8.1.388 MEASURED_CD_THREE_SIGMA — (number) CD_THREE_SIGMA of the mask as measured by the vendor. For the associated <cd_group> or <cd_set>, this is the product of 3 times the standard deviation of all measurements

8.1.389 MEASURED_CD_TOLERANCE — (number) CD_TOLERANCE of the mask as measured by the vendor. For the associated <cd_group> or <cd_set>, this is the difference between the mean of all included measurements and the CD_TARGET. If the mean CD is larger than the target, then the value will be positive; if the mean CD is smaller than the target, then the value will be negative.

8.1.390 MEASURED_CD_XY_DEVIATION — CD_XY_DEVIATION of the mask as measured by the vendor. This is the maximum difference between any horizontally scanned and vertically scanned measurement at a <cd_xy_site> among all sites within the <cd_xy_definition>. The MEASURED_VERTICAL_CD should always be subtracted from the MEASURED_HORIZONTAL_CD.

8.1.391 MEASURED_CD_XY_MORPHOGRAPHY — The CD_MORPHOGRAPHY of all of the <cd_xy_site> CD features if they were all specified in <mask_order> and if they were all of the same morphography type. The data value would be "unspecified" if some sites were not specified, or "mixed" if not all sites were the same.

8.1.392 MEASURED_CD_XY_TOLERANCE — CD_XY_TOLERANCE of the mask as measured by the vendor. This is the difference between the mean of all horizontally scanned critical dimension measurements to the mean of all vertically scanned critical dimension measurements within the <cd_xy_definition>. The mean of the vertically scanned critical dimensions should always be subtracted from the mean of the horizontally scanned critical dimensions.

8.1.393 MEASURED_CD_XY_TONE_CLEAR — (T or F) The CD_TONE_CLEAR of all of the <cd_xy_site> CD features. They must all be the same as per the requirement of CD_XY_TOLERANCE and CD_XY_DEVIATION.

8.1.394 MEASURED_CENTRALITY — CENTRALITY as measured by the vendor.

8.1.395 MEASURED_CLOSURE_LOCATION — (text) Description of the location where MEASURED_REGISTR_CLOSURE was measured. This may be descriptive (e.g., "upper left") or coordinate-based, as agreed by the vendor and the customer.

8.1.396 MEASURED_CLOSURE_READING   (x,y) REGISTR_CLOSURE as measured by the vendor in both axes at MEASURED_CLOSURE_LOCATION.

8.1.397 MEASURED_DEFECT_COUNT — DEFECT_COUNT as measured by the vendor.

8.1.398 MEASURED_DEFECT_COUNT_REP — DEFECT_COUNT_REP as measured by the vendor.

8.1.399 MEASURED_DEFECT_COUNT_WITHIN_SPEC — Number of defects detected during inspection which were smaller than the specification, excluding false detections.

8.1.400 MEASURED_DEFECT_DENSITY — DEFECT_DENSITY as measured by the vendor.

8.1.401 MEASURED_DEFECT_FILE_NAME — Name of data file containing results of defect inspection.

8.1.402 MEASURED_DEFECTIVE_DIE_COUNT — DEFECTIVE_DIE_COUNT as measured by the vendor.

8.1.403 MEASURED_DEFECTIVE_DIE_COUNT_REP — DEFECTIVE_DIE_COUNT_REP as measured by the vendor.

8.1.404 MEASURED_DEFECTIVE_DIE_DENSITY — DEFECTIVE_DIE_DENSITY as measured by the vendor.

8.1.405 MEASURED_ETCH_DEPTH — Phase shift etch depth as measured at a single site.

8.1.406 MEASURED_ETCH_DEPTH_AVERAGE — Mean of all customer-specified etch depth measurement sites.

8.1.407 MEASURED_ETCH_DEPTH_ERROR — ETCH_DEPTH_ERROR as measured by the vendor.

8.1.408 MEASURED_ETCH_DEPTH_MARK_SITE_ID — Must match ETCH_DEPTH_MARK_SITE_ID in <mask_order> for site being measured. If the customer assigned no ETCH_DEPTH_MARK_SITE_ID for the required location (e.g., only ETCH_DEPTH_MARK_LOCATION_DRAWING was used), the vendor will assign a MEASURED_ETCH_DEPTH_MARK_SITE_ID for each measurement location so that it is unique within the MASK_SET_ID.

8.1.409 MEASURED_ETCH_DEPTH_RANGE — ETCH_DEPTH_RANGE as measured by the vendor.

8.1.410 MEASURED_ETCH_DEPTH_TOLERANCE — ETCH_DEPTH_TOLERANCE as measured by the vendor. If the mean etch depth is greater than the target, then reported value will be positive; if the mean etch depth is less than the target, then reported value will be negative.

8.1.411 MEASURED_HORIZONTAL_CD — Measured value of horizontal critical dimension.

8.1.412 MEASURED_PERCENT_CLEAR — PERCENT_CLEAR as computed by the vendor.

8.1.413 MEASURED_PERCENT_DEFECTIVE_DIE — PERCENT_DEFECTIVE_DIE as measured by the vendor.

8.1.414 MEASURED_PHASE_ANGLE — Phase angle as measured at a single site.

8.1.415 MEASURED_PHASE_ANGLE_AVERAGE — Mean of all customer-specified phase angle measurement sites.

8.1.416 MEASURED_PHASE_ANGLE_ERROR — PHASE_ANGLE_ERROR as measured by the vendor.

8.1.417 MEASURED_PHASE_ANGLE_MARK_SITE_ID — Must match PHASE_ANGLE_SITE_ID in <mask_order> for site being measured. If the customer assigned no PHASE_ANGLE_SITE_ID for the required location (e.g., only PHASE_ANGLE_MARK_LOCATION_DRAWING was used), the vendor will assign a MEASURED_PHASE_ANGLE_MARK_SITE_ID for each measurement location so that it is unique within the MASK_SET_ID.

8.1.418 MEASURED_PHASE_ANGLE_RANGE — PHASE_ANGLE_RANGE as measured by the vendor.

8.1.419 MEASURED_PHASE_ANGLE_TOLERANCE — PHASE_ANGLE_TOLERANCE as measured by the vendor. If the mean phase angle is greater than the target, then reported value will be positive; if the mean phase angle is less than the target, then reported value will be negative.

8.1.420 MEASURED_REGISTR_CLOSURE — (x,y) REGISTR_CLOSURE as measured by the vendor in both axes.

8.1.421 MEASURED_REGISTR_ERROR — REGISTR_ERROR as measured by the vendor. This is the maximum registration deviation (positive or negative in either X or Y) of any measured registration mark.

8.1.422 MEASURED_REGISTR_FILE_NAME — Name of data file containing results of registration measurement.

8.1.423 MEASURED_REGISTR_MARK_ERROR — (x,y) Registration error of an individual mark.

8.1.424 MEASURED_REGISTR_MARK_ID — Must match REGISTR_MARK_ID in <mask_order> for site being measured. If the customer assigned no REGISTR_MARK_ID for the required location (e.g., only MEASURE_FILE_NAME was used), the vendor will assign a MEASURED_REGISTR_MARK_ID for each measurement location so that it is unique within the MASK_SET_ID. If REGISTR_MARK_ID was used as a <pattern_options> in <mask_order> for a pattern with multiple instances, then the vendor will add a suffix to REGISTR_MARK_ID for each instance so that each MEASURED_REGISTR_MARK_ID in <mask_results> will be unique.

8.1.425 MEASURED_REGISTR_MARK_LOCATION — (x,y) Location of individual registration mark, relative to nominal center of substrate (chrome side up), as measured by the vendor. This is the location of the mark as measured by the vendor.

8.1.426 MEASURED_REGISTR_MARK_RESIDUAL — (x,y) Registration error of an individual mark after removing scale and orthogonality.

8.1.427 MEASURED_REGISTR_MINIMUM — (x,y) Measured minimum error of all registration measurements in both x and y. Note that the location of the minimum in x is probably not at the same location as the minimum in y.

8.1.428 MEASURED_REGISTR_MAXIMUM — (x,y) Measured maximum error of all registration measurements in both x and y. Note that the location of the maximum in x is probably not at the same location as the maximum in y.

8.1.429 MEASURED_REGISTR_ORTHO — REGISTR_ORTHO as measured by the vendor.

8.1.430 MEASURED_REGISTR_RELATIVE — REGISTR_RELATIVE as measured by the vendor.

8.1.431 MEASURED_REGISTR_RESIDUAL — (x,y) REGISTR_RESIDUAL as measured by the vendor.

8.1.432 MEASURED_REGISTR_RESIDUAL_THREE_SIGMA — (x,y) REGISTR_RESIDUAL_THREE_SIGMA as measured by vendor.

8.1.433 MEASURED_REGISTR_SCALE — (x,y) REGISTR_SCALE as measured by the vendor.

8.1.434 MEASURED_REGISTR_THREE_SIGMA — (x,y) REGISTR_THREE_SIGMA as measured by vendor.

8.1.435 MEASURED_REGISTR_TOLERANCE — (x,y) The mean measured registration error in both x and y. Deviations for which the measured location is to the right or above the reference grid or reference mask are considered positive; measured locations to the left or below the reference grid or reference mask are considered negative.

8.1.436 MEASURED_TRANSMISSION — Phase shift transmission as measured at a single site.

8.1.437 MEASURED_TRANSMISSION_AVERAGE — Mean of all customer-specified transmission measurement sites.

8.1.438 MEASURED_TRANSMISSION_ERROR — TRANSMISSION_ERROR as measured by the vendor.

8.1.439 MEASURED_TRANSMISSION_MARK_SITE_ID — Must match TRANSMISSION_MARK_SITE_ID in <mask_order> for site being measured. If the customer assigned no TRANSMISSION_MARK_SITE_ID for the required location (e.g., only TRANSMISSION_MARK_LOCATION_DRAWING was used), the vendor will assign a MEASURED_TRANSMISSION_MARK_SITE_ID for each measurement location so that it is unique within the MASK_SET_ID.

8.1.440 MEASURED_TRANSMISSION_RANGE — TRANSMISSION_RANGE as measured by the vendor.

8.1.441 MEASURED_TRANSMISSION_TOLERANCE — TRANSMISSION_TOLERANCE as measured by the vendor. If the mean transmission is greater than the target, then reported value will be positive; if the mean transmission is less than the target, then reported value will be negative.

8.1.442 MEASURED_VERTICAL_CD — Measured value of vertical critical dimension.

8.1.443 MFG_BIAS_PREAPPLIED — Amount (in microns, prior to scaling) of sizing pre-applied by the customer to support mask processing of CD_DATA to achieve CD_TARGET. A negative MFG_BIAS_PREAPPLIED indicates that the digitized geometry has been made smaller.

8.1.444 MFG_SITE_REQD — Alphanumeric identification of qualified manufacturing sites, to be agreed between customer and vendor. For a given MASK_ID, MFG_SITE_REQD may not be used in combination with EQUIP_SITE_REQD.

8.1.445 MFG_SITE_USED — Alphanumeric identification of manufacturing site used, to be agreed between customer and vendor.

8.1.446 MILESTONE — (ORDER_RECEIVED, ORDER_ACCEPTED, DATA_PREPARED, MASK_WRITTEN, CDS_MEASURED, REGISTR_MEASURED, DEFECTS_REPAIRED, PELLICLES_APPLIED, POST_PELLICLE_INSPECTION, SHIPPED, DELIVERED, ON_HOLD, OFF_HOLD) notifies the customer that the MASK_ID has passed the indicated processing step, or is on hold.

8.1.447 MILESTONES — (T or F) If T, the vendor is requested to use <mask_results> (see §7.5) to notify the customer each time the mask completes a significant processing step. Within this standard, these significant steps

are limited to those defined under MILESTONE. MILESTONES may not be used in combination with PERIODIC_UPDATES for the same MASK_ID.

8.1.448 MIN_CORNER_TO_CORNER_GAP — Smallest (scaled) corner-to-corner spacing of any features included in any customer-supplied pattern data on the mask.

8.1.449 MIN_MASK_FEATURE_SIZE — Smallest (scaled) feature included in any customer-supplied pattern data on the mask.

8.1.450 MINIMUM_FEATURE_LOCATION — Location of a minimally sized feature within the pattern file, relative to the center of the pattern, unscaled and unmirrored.

8.1.451 MINIMUM_FEATURE_SIZE — Smallest (unscaled) feature included in pattern data, excluding OPC data which is identified under OPC_MINIMUM_FEATURE_SIZE.

8.1.452 MIRROR — (HORIZONTAL or VERTICAL) Axis around which to invert the data image.

8.1.453 MIRROR_MASK — (T or F) All patterns and titles must be mirrored about the vertical axis, to be applied in addition to all other positioning information.

8.1.454 MIRROR_PATTERN — (T or F) If T, the pattern file (or cell) is to be mirrored about its vertical axis. If used in conjunction with MIRROR_MASK, the result will be unmirrored pattern data while all other data will be mirrored.

8.1.455 MIRROR_TITLE — (T or F) If T, TITLE_TEXT is to be mirrored about the vertical axis. If used in conjunction with MIRROR_MASK, result will be an unmirrored title with all other data mirrored (chrome side up).

8.1.456 MULTIWRITE — (x,y) If present as a mask option, then the MASK_ID represents only one writing operation for a mask which requires multiple write and process cycles (defined within the <mask_group>) before the final mask is completed. All MASK_IDs used to make the final mask must have MULTIWRITE as a <mask_option> and must designate the same integer group number (x). Such a final mask will be built with a specified integer sequence (y) of MASK_IDs. Sequence numbers may never be less than 1 nor more than the number of write and process cycles specified in the order, except that zero may be used where the sequence is arbitrary. A sequence number within a group may not be repeated (except zero).

8.1.457 MULTIWRITE_REF_MASK_ID — Within the MULTIWRITE numerical group, this is the MASK_ID to which overlay error should be measured.

8.1.458 NUMBER_OF_CDS — The integer number of CD locations to be measured. If sufficient specific sites are not explicitly identified by the customer, the vendor is free to select additional similar sites.

8.1.459 OPC_MINIMUM_FEATURE_SIZE — For the OPC_TYPE being described, the size of the smallest (unscaled) OPC feature in the pattern data.

8.1.460 OPC_MINIMUM_GAP — For the OPC_TYPE being described, the size of the smallest (unscaled) gap in the pattern data between OPC features of the same type.

8.1.461 OPC_PATTERN_MODIFIABLE — (T or F) If F, the pattern may not be modified (biased) by the mask shop for printability or CD linearity improvement. In this case, the need for such biasing must have been anticipated by the customer.

8.1.462 OPC_PATTERN_SEPARATE — (T or F) If T, then the pattern being described is only the OPC portion of what will be written on the mask. Depending upon the write tool methodology, the pattern may need to be merged off-line with other patterns. This may allow mask shop biasing for printability or CD linearity unless precluded by OPC_PATTERN_MODIFIABLE = F.

8.1.463 OPC_TYPE — (CLEAR_SERIF, CLEAR_HAMMERHEAD, CLEAR_ASSIST_BAR, OPAQUE_SERIF, OPAQUE_HAMMERHEAD, OPAQUE_ASSIST_BAR, JOG, PILLAR, HOLE) (Linewidth biasing is not included as an OPC type.)

8.1.464 OPERATOR — (text) Mask supplier identification of employee who completed the photomask requirements for the given operation.

8.1.465 OPERATOR_NAME — Alphabetic name of the person entering the mask order or entering the mask results.

8.1.466 OPTICAL_MASK_ID — For optical stepping or contact printing, the "pattern" is to be obtained by using a reticle or mask built under this MASK_ID from the above-named MASK_SET_ID.

8.1.467 OPTICAL_MASK_SET_ID — For optical stepping or contact printing, the "pattern" is to be obtained by using a reticle or mask from this MASK_SET_ID.

8.1.468 OPTICAL_MASK_TITLE — For optical stepping or contact printing, identifying title on reticle or mask. To be used in place of OPTICAL_MASK_SET_ID and OPTICAL_-MASK_ID when the reticle or mask was built without available <mask_order> data.

8.1.469 ORDER_ACCEPTED — Returns the exact FILE_DATE_TIME as in the file being accepted, thereby agreeing to process the order as received.

8.1.470 ORDER_ID — Printable text of the customer's internal order identification to provide correlation with pre-existing order tracking systems. This is for customer cross-referencing only, but should be recorded by the vendor and reported back in <mask_results>.

8.1.471 ORDER_RECEIVED — Returns the exact FILE_DATE_TIME as in the file being acknowledged, thereby confirming receipt of that file. This response is required each time a new transmission is received by the vendor.

8.1.472 PACKAGE — Alphanumeric identification of brand and model of acceptable compact to be used for delivering masks.

8.1.473 PACKAGE_USED — (text) The compact vendor's part number of the compact in which the mask was shipped and any additional compacts supplied.

8.1.474 PARAMETER_FILE_NAME REVISION — (text) Name of parameter file required by RUNSET_NAME. Note that multiple run_set_name entries under a SOFTWARE_NAME means that multiple runs with the same software are required.

8.1.475 PARAMETER_FILE_REVISION — (text) Revision identification of PARAMETER_FILE_NAME.

8.1.476 PATTERN_ADDRESS_SIZE — Address unit of the (unscaled) pattern file. If this is incorrect, the mask will not be written until it is corrected. For data manipulation operations, this is the address to use in final fracturing to produce a pattern file for exposure.

8.1.477 PATTERN_APPROVAL_REQD — name the pattern to be approved before the mask(s) may be written.

8.1.478 PATTERN_APPROVED — (date, name) Date approval was granted by customer and the name of the pattern for PATTERN_APPROVAL_REQD.

8.1.479 PATTERN_CHARACTER_SET — (ASCII or EBCDID) ASCII is assumed unless otherwise specified.

8.1.480 PATTERN_FORMAT — (ALF, APPLICON, AUTOCAD, CATS_CFLT, CATS_CREF, CIF, DERIVED, EEBES, ELECTROMASK, FALCON, GDS-II, HITACHI_700, HITACHI_800, JEOL_51, JEOL_52, KLARIS, MANN_3000, MANN_3600, MEBES_I, MEBES_II, MEBES_EXTENDED, MEBES_RETICLE, MEBES_MODE 5, OASIS, ORBOT, ULTRABEAM, VSB11, ZBA, and others on request). Format of preceding pattern file. For <data_manipulation> results, if multiple PATTERN_FORMATS are listed, they are in declining order of preference. For BOOLEAN operations, DERIVED indicates DATA_SOURCE_FILE was the result of a previous <data_manipulation> process.

8.1.481 PATTERN_FUNCTION — (FRAME, DEVICE, FIDUCIAL, BARCODE, TEST and others as needed by the user) This keyword is for reference purposes only, with no action or requirement implied for the mask supplier. It will serve merely to provide a functional name for customer convenience.

8.1.482 PATTERN_GENERATION_AREA — (x1,y1,x2,y2) Window in which to generate a digitized rectangle for use in BOOLEAN operations, relative to the coordinate space of DATA_SOURCE_FILE.

8.1.483 PATTERN_GROUP_ID — Name of the pattern group which follows; must be used in all references within this MASK_SET_ID to this pattern group.

8.1.484 PATTERN_GROUP_INSTANCE — Identifies PATTERN_GROUP_ID to be placed by the following location information.

8.1.485 PATTERN_NAME — Printable ASCII pattern file name. The file may be received intact, or may be derived through data manipulation.

8.1.486 PATTERN_PLOT_APPR_REQD — (T or F) If T, customer approval of the pattern plot is required before mask making is authorized.

8.1.487 PATTERN_PLOT_NORMAL_TONE — (T or F) If T, digitized data will be dark.

8.1.488 PATTERN_UNITS — (METRIC, ENGLISH) Units of preceding pattern file.

8.1.489 PATTERN_VISUAL_ID — Optional, printable text to specify identification within the pattern file which must be visually confirmed as present before the mask may be written. If the feature is not present, the mask order should go on hold.

8.1.490 PERCENT_CLEAR — Percentage of the patterned area which will become transparent after the mask is processed. As a mask option it includes all the area within the scribe pattern limits. As a pattern option it includes the area within the individual pattern limits.

8.1.491 PERCENT_CLEAR_REQUESTED — (T or F) If T, the vendor is requested to calculate, using available CAD tools, the percentage of the patterned area on the mask which will become transparent after the mask is processed, and transmit this value to the customer.

8.1.492 PERCENT_DEFECTIVE_DIE — Maximum percentage of defective die among those required by the customer to meet defect criteria.

8.1.493 PERIODIC_UPDATE — notifies the customer that MASK_ID has passed the indicated processing step, or is on hold.

8.1.494 PERIODIC_UPDATES — (integer) If non-zero, the vendor is requested to use <mask_results> (see §7.5) to notify the customer on a periodic basis which significant processing step was last completed for MASK_ID. The value of the data field indicates the number of hours between updates. Within this standard, these significant steps are limited to those defined under MILESTONE. PERIODIC_UPDATES may not be used in combination with MILESTONES for the same MASK_ID.

8.1.495 PHASE_ANGLE_EQUIP_REQD — (text) Phase angle measurement equipment required by customer.

8.1.496 PHASE_ANGLE_EQUIP_USED — (text) Phase angle measurement equipment used.

8.1.497 PHASE_ANGLE_ERROR — Maximum acceptable deviation (in degrees) of any phase shift measurement from the PHASE_ANGLE_TARGET.

8.1.498 PHASE_ANGLE_MARK_DRAWING — The uniquely identified (for each customer) document which shows the phase angle mark structure itself, and may show the place(s) within the phase angle mark which are to be measured.

8.1.499 PHASE_ANGLE_MARK_FEATURE — Text describing the feature to be used for phase angle measurement.

8.1.500 PHASE_ANGLE_MARK_LOCATION — (x,y) Location of phase angle mark relative to the nominal center of the mask (chrome side up).

8.1.501 PHASE_ANGLE_MARK_LOCATION_DRAWING — The uniquely identified (for each customer) document which shows the location(s) of the phase angle mark structure.

8.1.502 PHASE_ANGLE_MEASUREMENT_DATE — Phase angle measurement date.

8.1.503 PHASE_ANGLE_MEASUREMENT_FILE_NAME — Name of data file containing results of phase angle measurement.

8.1.504 PHASE_ANGLE_MODE_REQD — (text) operating mode required by customer for PHASE_ANGLE_EQUIP_USED.

8.1.505 PHASE_ANGLE_MODE_USED — (text) operating mode used on PHASE_ANGLE_EQUIP_USED.

8.1.506 PHASE_ANGLE_RANGE — Maximum acceptable variation (in degrees) of phase shift measurements, relative to each other.

8.1.507 PHASE_ANGLE_REFERENCE_ONLY — (T or F) If T, indicates that the phase angle feature is to be measured and the data transmitted to the customer (if requested by SHIP_PHASE_SHIFT_MEASUREMENTS), but that deviations in its measured value due to mask processing would NOT be cause for mask rejection.

8.1.508 PHASE_ANGLE_SITE_ID — Unique alphanumeric identifier of each phase angle measurement location within MASK_SET_ID to identify individual locations when using <mask_results>. If the same coordinates apply to locations on different masks within the mask set, they may have the same PHASE_ANGLE_SITE_ID, but it is not mandatory.

8.1.509 PHASE_ANGLE_TARGET — The required phase shift in degrees at the specified PSM_WAVELENGTH.

8.1.510 PHASE_ANGLE_TOLERANCE — The maximum acceptable deviation of the mean of all phase shift measurements (in degrees) to the PHASE_ANGLE_TARGET.

8.1.511 PHASE_SHIFT_QUALITY_ID — (text) Customer's label for a collection of phase shift quality specifications, to be used only in addition to explicit quality requirement keywords. This may be used in the data structure in addition to, but not in place of, explicit quality requirement keywords. This may not be used in combination with QUALITY_GROUP_ID. Customer and vendor should document the meaning of this quality grade before using it in SEMI P10.

8.1.512 PLACEMENT_TOP_CELL — Name of CELL_ID which defines all pattern place-ments for this MASK_GROUP_ID. This referenced cell is centered on the mask.

8.1.513 PLOT_FORMAT — (GIF, JPG, PNG, FAX, PAPER) Medium for delivery of plot.

8.1.514 PLOT_SCALE — Numeric scale of plot or map.

8.1.515 PLOT_TYPE — (JOB_DATA, ARRAY, PATTERN, BARCODE) Requires delivery of the plot to the customer. JOB_DATA requires delivering a plot of the entire patterned area of the mask, including the image of the pattern file data. ARRAY requires an array map to be sent showing only an outline of each pattern and not showing the image content of any pattern. PATTERN requires delivering a plot of the pattern at the scale and tone indicated. BARCODE requires delivering a plot of the pattern created by <barcode_data>. PATTERN is the only value permitted under <pattern_options>. The other types are permitted only under <shippable_data>.

8.1.516 PO_NUMBER — Alphanumeric purchase order number.

8.1.517 POST_PELL_INSPECTION_DATE_AND_TIME — Date and time of the final qualifying inspection run after applying the pellicle.

8.1.518 POST_PELL_INSPECTION_ID — Identification (or serial number) assigned by the inspection tool for the final qualifying inspection run after applying the pellicle.

8.1.519 PRE_PELL_INSPECTION_DATE_AND_TIME — Date and time of the final qualifying inspection run prior to applying the pellicle.

8.1.520 PRE_PELL_INSPECTION_ID — Identification (or serial number) assigned by the inspection tool for the final qualifying inspection run prior to applying the pellicle.

8.1.521 PRICE — Price (excluding freight and taxes) for preceding item (e.g., mask, pellicle, plot, database inspection).

8.1.522 PRICE_UNITS — (3-character alphabetic currency code as listed in ISO 4217) Monetary unit used in all references to PRICE with the <mask_set>.

8.1.523 PROCESS — (text) Name of the special process to be used in making the masks.

8.1.524 PROCESS_ETCHING_TYPE — (DRY or WET) Etching process to be used in making the masks.

8.1.525 PRODUCT_AS_CHECKPLATE — (T or F) If T, product mask is to be used for check-plate approval prior to making other product masks.

8.1.526 PRODUCT_IMAGING_TYPE — (BINARY, AAPSM, EAPSM, COMPLIMENTARY, BINARY_TRIM, or EUV)

8.1.527 PRODUCT_MAGNIFICATION — (10X, 5X, 4X, 2.5X, 2X, 1.25X, 1X, 0.8X) Factor by which the exposure tool will reduce the image on the photomask (reticle) to form the image on the wafer.

8.1.528 PRODUCT_TYPE — (1X_FULL_FIELD, 1X_STD_FIELD_RETICLE, 1X_WIDE_FIELD_RETICLE, RETICLE, CONTACT, SUBMASTER, CHECKPLATE, PROBE_PLATE, REPELLICLIZE and REINSPECT).

8.1.529 PSM_WAVELENGTH — Wavelength in nanometers to be used for <phase_shift> measurements. This keyword may appear in addition to AIM_WAVELENGTH for a single MASK_ID, though the values of the two should usually be the same.

8.1.530 PTC_FIXED — (numeric) The additional charge for the mask shipping within the time defined in the corresponding PTC_HOURS. The value is expressed as a fixed monetary amount and is mutually exclusive with PTC_RATE.

8.1.531 PTC_HOURS — (numeric) The number of hours from a given mask's start date time (as negotiated between the customer and vendor) within which the mask must be shipped to qualify for the Premium Time Charge (PTC) specified in either PTC_RATE or PTC_FIXED. Multiple instances allow configuration of different charge rates for different levels of performance, for example: 100 % for 12 hr turn, 75 % for 18 hr turn, 50 % for 24 hr turn.

8.1.532 PTC_RATE — (numeric) The additional charge for the mask shipping within the time defined in the corresponding PTC_HOURS. The value represents the percentage of the total mask price (excluding EWT_THRESHOLD hours) and is mutually exclusive with PTC_FIXED.

8.1.533 QS9000 — (T or F) If T, requires QS9000 control. Customer and vendor should agree on the methods and control details before using this item.

8.1.534 QUALITY_GROUP_ID — (text) Customer's label for a collection of mask quality specifications, to be used only in addition to explicit quality requirement keywords. This may be used in the data structure in addition to, but not in place of, explicit quality requirement keywords. Customer and vendor should document the meaning of this quality grade before using it in SEMI P10.

8.1.535 QUANTITY — Integer number of array plots, pattern plots and films. May also apply to masks only when PRODUCT_TYPE is contact masks.

8.1.536 QUOTE_NUMBER — Vendor's quotation number to be referenced in billing documents.

8.1.537 REGISTR_ALGORITHM — (ONE-POINT, TWO-POINT or MULTI-POINT, x1,y1,x2,y2) Specifies the method for analyzing registration reference marks. For ONE-POINT analysis, (x1,y1) is the fixed point and (x2,y2) is used for angular orientation only. For TWO-POINT analysis, (x1,y1) and (x2,y2) are both used for angular orientation and the fixed reference point is midway between the two. If MULTI-POINT is followed in the data field by no specific points, then MULTI-POINT is the fit of all measured points resulting in zero mean error in x and zero mean error in y. If MULTI-POINT is followed in the data field by a collection of three or more specific points, then MULTI-POINT is the fit of all the specific points resulting in zero mean error in x and zero mean error in y for those points. All of these points are relative to the nominal center of the mask.

8.1.538 REGISTR_ALGORITHM_USED — The method used for analyzing registration reference marks in the registration measurements.

8.1.539 REGISTR_CLOSURE — Maximum allowable positional error between patterns written at the beginning of writing the mask and the end of writing the mask, to be measured in both x and y axes.

8.1.540 REGISTR_CLOSURE_BEGIN — Identifies the CELL_ID or PATTERN_GROUP_ID to be used at the beginning of writing the mask for REGISTR_CLOSURE measurement.

8.1.541 REGISTR_CLOSURE_END — Identifies the CELL_ID or PATTERN_GROUP_ID to be used at the end of writing the mask for REGISTR_CLOSURE measurement.

8.1.542 REGISTR_CLOSURE_EQUIP_REQD — Alphanumeric identification of acceptable equipment for closure measurement.

8.1.543 REGISTR_CLOSURE_EQUIP_USED — Closure measurement equipment used.

8.1.544 REGISTR_CLOSURE_REFERENCE_ONLY — (T or F) If T, indicates that the closure measurements are to be measured and the data transmitted to the customer (if requested by SHIP_CLOSURE_DATA), but that deviations in its measured value due to mask processing would NOT be cause for mask rejection.

8.1.545 REGISTR_COMPENSATION_TEMPERATURE — Temperature in Celsius of the mask at the time registration measurement data is to be collected.

8.1.546 REGISTR_EQUIP_REQD — Alphanumeric identification of acceptable equipment for measuring REGISTR_ERROR and REGISTR_ORTHO.

8.1.547 REGISTR_EQUIP_USED — Registration measurement equipment used.

8.1.548 REGISTR_ERROR — Maximum allowable registration error, relative to the REGISTR_REF_MASK_ID or the reference grid of REGISTR_EQUIP_REQD. The mask must be rejected if the deviation in either X or Y of any measured registration mark exceeds REGISTR_ERROR.

8.1.549 REGISTR_MARK_COUNT — (x,y) For a rectangular array of registration marks, the number of rows (x) and columns (y).

8.1.550 REGISTR_MARK_DRAWING — The uniquely identified (for each customer) document which shows the registration mark structure itself, and may show the place(s) within the registration mark which are to be measured.

8.1.551 REGISTR_MARK_FEATURE — Text describing the feature to be used for registration measurement.

8.1.552 REGISTR_MARK_ID — Unique alphanumeric identifier of each registration mark location within MASK_SET_ID to identify individual registration measurements when using <mask_results>. If the same coordinates apply to locations on different masks within the mask set, they may have the same REGISTR_MARK_ID, but it is not mandatory. If REGISTR_MARK_ID is used with a CELL_REGISTR_MARK, it will be associated with as many mask locations as the cell has instances. (See MEASURED_REGISTR_MARK_ID for more information.) REGISTR_MARK_ID may only be used immediately preceding either MASK_REGISTR_MARK or CELL_REGISTR_MARK.

8.1.553 REGISTR_MARK_LOCATION_DRAWING — The uniquely identified (for each customer) document which shows the location(s) of the registration mark structure.

8.1.554 REGISTR_MARK_SEPARATION — (x, y) For an array of registration marks, the spacing between successive marks in the horizontal (x) and vertical (y) directions.

8.1.555 REGISTR_MEASUREMENT_DATE — Date registration measurement was performed.

8.1.556 REGISTR_ORTHO — Maximum allowable non-orthogonality, in micro-radians, relative to the REGISTR_REF_MASK_ID or the reference grid of REGISTR_EQUIP_REQD.

8.1.557 REGISTR_ORTHO_REFERENCE_ONLY — (T or F) If T, indicates that REGISTR_ORTHO is to be measured and the data transmitted to the customer (if requested by SHIP_REGISTR_DATA), but that deviations in its measured value due to mask processing would NOT be cause for mask rejection.

8.1.558 REGISTR_QUALITY_ID — (text) Customer's label for a collection of registration quality specifications, to be used only in addition to explicit quality requirement keywords. This may be used in the data structure in addition to, but not in place of, explicit quality requirement keywords. This may not be used in combination with QUALITY_GROUP_ID. Customer and vendor should document the meaning of this quality grade before using it in SEMI P10.

8.1.559 REGISTR_REF_MASK_ID — MASK_ID of the reference mask for determining REGISTR_ERROR and REGISTR_ORTHO. If multiple masks are identified, the reference grid should be based on the mean of the measurements of the group of masks.

8.1.560 REGISTR_REF_MASK_NAME — To be used in place of REGISTR_REF_MASK_ID only to refer to those mask sets which were built outside the SEMI order standard and have no MASK_ID.

8.1.561 REGISTR_REF_MASK_SET_ID — MASK_SET_ID for the mask set containing REGISTR_REF_MASK_ID for determining REGISTR_ERROR and REGISTR_ORTHO.

8.1.562 REGISTR_REF_MASK_SET_NAME — To be used in place of REGISTR_-REF_MASK_SET_ID only to refer to those mask sets which were built outside the SEMI order standard and have no MASK_SET_ID.

8.1.563 REGISTR_REF_MASK_SET_VERSION — To be used in addition to REGISTR_-REF_MASK_SET_NAME only to refer to those mask sets which were built outside the SEMI order standard and have no MASK_SET_ID.

8.1.564 REGISTR_REF_METHOD_REQD — Alphanumeric description of the method and/or reference marks to use for measuring REGISTR_-ERROR and REGISTR_ORTHO (e.g., using a previously established reference, or the REGISTR_-EQUIP_REQD grid).

8.1.565 REGISTR_REF_METHOD_USED — Alphanumeric description of the method and/or reference marks used by the vendor for measuring REGISTR_ERROR and REGISTR_ORTHO.

8.1.566 REGISTR_RELATIVE — If present, indicates that the START_REGISTR collection in which REGISTR_RELATIVE is contained is to be measured relative to another START_REGISTR collection, rather than to the grid of the registration measurement tool. The alphanumeric data field of REGISTR_RELATIVE must match the data field of START_REGISTR of the collection to which it is to be compared.

8.1.567 REGISTR_RELATIVE_REFERENCE_ONLY — (T or F) If T, indicates that REGISTR_RELATIVE is to be measured and the data transmitted to the customer (if requested by SHIP_REGISTR_DATA), but that deviations in its measured value due to mask processing would NOT be cause for mask rejection.

8.1.568 REGISTR_RESIDUAL — (x,y) The maximum acceptable deviation in both axes (in microns) of all registration measurements relative to the REGISTR_STD_GRID, with REGISTR_SCALE and REGISTR_ORTHO removed. The mask must be rejected if the residual deviation in either X or Y of any measured registration mark exceeds REGISTR_RESIDUAL.

8.1.569 REGISTR_RESIDUAL_REFERENCE_ONLY — (T or F) If T, indicates that REGISTR_RESIDUAL is to be measured and the data transmitted to the customer (if requested by SHIP_REGISTR_DATA), but that deviations in its measured value due to mask processing would NOT be cause for mask rejection.

8.1.570 REGISTR_RESIDUAL_THREE_SIGMA — (x,y) The maximum acceptable 3 sigma deviation in both axes (in microns) of all registration measurements, with REGISTR_SCALE and REGISTR_ORTHO removed. The mask must be rejected if the residual 3 sigma deviation in either X or Y exceeds REGISTR_RESIDUAL.

8.1.571 REGISTR_RESIDUAL_THREE_SIGMA_REFERENCE_ONLY — (T or F) If T, indicates that REGISTR_RESIDUAL_THREE_SIGMA is to be measured and the data transmitted to the customer (if requested by SHIP_REGISTR_DATA), but that deviations in its measured value due to mask processing would NOT be cause for mask rejection.

8.1.572 REGISTR_SCALE — (x,y) Maximum acceptable scale error in each axis in parts per million, relative to the REGISTR_STD_GRID.

8.1.573 REGISTR_SCALE_REFERENCE_ONLY — (T or F) If T, indicates that REGISTR_SCALE is to be measured and the data transmitted to the customer (if requested by SHIP_REGISTR_DATA), but that deviations in its measured value due to mask processing would NOT be cause for mask rejection.

8.1.574 REGISTR_STD_GRID — (NIST, PTB and others on request) reference standard to be used to correlate registration measurement. This keyword is not allowed in conjunction with REGISTR_REF_METHOD_REQD on the same mask.

8.1.575 REGISTR_STD_GRID_USED — (NIST, NBS, and others on request) The reference standard used to correlate the registration measurements.

8.1.576 REGISTR_THREE_SIGMA — (x,y) The maximum acceptable 3 sigma deviation in both axes (in microns) of all registration measurements. Both the 3 sigma deviation in x and the 3 sigma deviation in y must be less than REGISTR_THREE_SIGMA for the mask to be acceptable.

8.1.577 REGISTR_THREE_SIGMA_REFERENCE_ONLY — (T or F) If T, indicates that REGISTR_THREE_SIGMA is to be measured and the data transmitted to the customer (if requested by SHIP_REGISTR_DATA), but that deviations in its measured value due to mask processing would NOT be cause for mask rejection.

8.1.578 REGISTR_TOLERANCE — Maximum acceptable deviation of the mean registration error of all measured registration marks, in both axes, relative to the REGISTR_REF_MASK_ID or the reference grid of REGISTR_EQUIP_REQD. Both the mean in x and the mean in y must be less than REGISTR_TOLERANCE for the mask to be acceptable.

8.1.579 RELEASE_NUMBER — Alphanumeric release number under BLANKET PO NUMBER.

8.1.580 REPAIR_EQUIP_REQD — Alphanumeric identification of acceptable equipment for repairing mask defects.

8.1.581 REPAIR_EQUIP_USED — Alphanumeric identification of equipment used for repairing mask defects.

8.1.582 REPAIRS_AUTHORIZED — (T or F) If F, customer approval is required before mask repairs can be made.

8.1.583 RESIST_THICKNESS — Resist thickness in Angstroms.

8.1.584 RESIST_TYPE — (POSITIVE or NEGATIVE) This data item is needed for <mask_order> only if overlapping patterns are required. (Overlapping patterns sometimes require the use of "blanking rectangles" to prevent exposure of areas which are to be exposed by another pattern.)

8.1.585 RESULT_FILE_NAME — (text) Name identifying the result output file for RUNSET_NAME. If this keyword appears in the <mask_order>, it must be explicitly referenced in a RUNSET_NAME and/or a PARAMETER_FILE_NAME.

8.1.586 RETROFIT_JOB_LEVEL — Level in RETROFIT_JOB_NAME to which new mask(s) must retrofit.

8.1.587 RETROFIT_JOB_NAME — Name of job file to which mask(s) must retrofit.

8.1.588 RETROFIT_MASK_ID — MASK_ID in RETROFIT_MASK_SET_ID to which new mask(s) must retrofit.

8.1.589 RETROFIT_MASK_NAME — To be used in place of RETROFIT_MASK_ID only for retrofit to those mask sets which were built outside the SEMI order standard and have no MASK_SET_ID.

8.1.590 RETROFIT_MASK_SET_ID — MASK_SET_ID of mask set to which new mask(s) must retrofit.

8.1.591 RETROFIT_MASK_SET_NAME — To be used in place of RETROFIT_MASK_SET_ID only for retrofit to those mask sets which were built outside the SEMI order standard and have no MASK_SET_ID.

8.1.592 RETROFIT_MASK_SET_VERSION — To be used in addition to RETROFIT_-MASK_SET_NAME only for retrofit to those mask sets which were built outside the order standard and have no MASK_SET_ID.

8.1.593 REVIEW_REQD — If present, indicates that a review will be required but that it need not be completed prior to building and/or shipping the masks. The alphanumeric data field describes the items to be reviewed.

8.1.594 ROTATE_TITLE — (0, 90, 180 or 270) Title is to be rotated clockwise the indicated number of degrees, prior to any mirroring.

8.1.595 ROTATE_TITLE_CHARACTERS — (0, 90, 180 or 270) Characters within the title are to be rotated clockwise the indicated number of degrees, prior to any mirroring.

8.1.596 ROTATION — (0, 90, 180 or 270) Angle in degrees at which an image is rotated counter-clockwise about its center, prior to mirroring.

8.1.597 RUNSET_NAME — Name of instruction file (such as .cinc files or DRC run sets). Note that multiple RUNSET_NAME entries under a SOFTWARE_NAME means that multiple runs with the same software are required.

8.1.598 RUNSET_REVISION — (text) Revision identification of the RUNSET_NAME.

8.1.599 SCALE_FACTOR — (De)magnification factor to be multiplied with the PATTERN_ADDRESS_SIZE to get the effective address to be used to write the pattern file. Data value must be positive. 1.0 is assumed unless specified otherwise. SCALE_FACTOR alters both the size of individual geometries and the size of the pattern file.

8.1.600 SCRATCH_INSP_AREA — (x1,y1,x2,y2) Unscaled coordinates of window for scratch inspection, lower left and upper right corners, relative to nominal center of mask (chrome side up).

8.1.601 SCRATCH_INSP_EXCLUDE — (x1, y1, x2, y2) Unscaled coordinates of window to be excluded from defect inspection, relative to nominal center of mask (chrome side up). (See SCRATCH_INSP_AREA.)

8.1.602 SCRATCH_SIZE_BACK — Maximum dimension of smallest unacceptable scratch on glass side of mask.

8.1.603 SCRATCH_SIZE_FRONT — Maximum dimension of smallest unacceptable scratch on patterned side of mask.

8.1.604 SCRIBE_INSIDE_CORNERS — (x1,y1,x2,y2) The inner limits of the SCRIBE_-TONE frame to be built for the dropout by the vendor. It consists of two pairs of coordinates: the lower-left and upper-right and these are relative to the DROPOUT window center.

8.1.605 SCRIBE_OUTSIDE_CORNERS — (x1,y1,x2,y2) The outer limits of the SCRIBE_-TONE frame to be built for the dropout by the vendor. It consists of two pairs of coordinates: the lower-left and upper-right and these are relative to the DROPOUT window center.

8.1.606 SCRIBE_TONE — (CLEAR or DARK) Border surrounding DROPOUT on mask is to be either clear or dark.

8.1.607 SECURITY_CLASS — (QML, SECRET, TOP_SECRET, CCI, or COMSEC) Security classification of mask set or individual mask.

8.1.608 SEM_PHOTO_LOCATION — (x,y) Location of SEM photographing location relative to the nominal center of the mask (chrome side up).

8.1.609 SEM_PHOTO_MATRIX_FILE_NAME — Alphanumeric name of file to be used for SEM photograph locations.   It is not to be used in conjunction with SEM_PHOTO_LOCATION within the same START_SEM_PHOTO to END_SEM_PHOTO set.

8.1.610 SEM_PHOTO_ROTATION — Angle in degrees at which a SEM Photo Image output is rotated about the Z axis of the mask. Angles are to be counter-clockwise with zero degrees as the regular orientation of the mask as written.

8.1.611 SEM_PHOTO_SCALE — Numeric scale of the SEM photograph image.

8.1.612 SEM_PHOTO_SITE_ID — Unique alphanumeric identifier of each SEM photographing location within MASK_SET_ID to identify individual SEM photo locations when using <mask_data>. If the same coordinates apply to locations on different masks within the mask set, they may have the same SEM_PHOTO_SITE_ID, but it is not mandatory.

8.1.613 SEM_PHOTO_TILT — Angle in degrees at which a SEM Photo Image output is tipped away from normal to the x/y plane of the mask.

8.1.614 SEMI_REVISION — Revision identification of the SEMI standard according to which the <mask_order> data structure was constructed. This revision is P10-0705.

8.1.615 SEND_FINAL_AUDIT_DATE_TIME — (T or F) If T, requires delivery of FINAL_AUDIT_DATE_TIME to the customer.

8.1.616 SEND_MASK_SHIPPED_DATE_TIME — (T or F) If T, requires delivery of MASK_SHIPPED_DATE_TIME to the customer.

8.1.617 SERIAL_NUMBER — (T or F) If T, a mask serial number must be included on the mask.

8.1.618 SEVERITY_CRITERION_REQD — (PASS, WARN, FAIL) Setup parameter required for inspection.

8.1.619 SEVERITY_CRITERION_USED — (PASS, WARN, FAIL) Setup parameter used for inspection.

8.1.620 SHIP_AIM_DATA — (T or F) If T, requires delivery of <wafer_exposure_information>, <aerial_image_info> and any output of the final inspection using the aerial imaging measurement tool.

8.1.621 SHIP_ARRAY_REGISTR_MAP — (T or F) If T, requires delivery of the registration map of the entire array to the customer.

8.1.622 SHIP_BARCODE_PLOT — (T or F) If T, the plot of the barcode must be sent to the customer.

8.1.623 SHIP_CD_DATA — (T or F) If T, requires delivery of all critical dimension measurements, criteria and evaluation data to the customer for all CD criteria specified.

8.1.624 SHIP_CD_PRINTOUT — (T or F) If T, requires delivery to the customer of the printout from the CD measurement tool.

8.1.625 SHIP_CD_UNIFORMITY_MAP — (T or F) If T, requires delivery to the customer of the uniformity map from the CD uniformity measurement tool.

8.1.626 SHIP_CENTRALITY_DATA — (T or F) If T, requires delivery of the centrality measurement to the customer.

8.1.627 SHIP_CENTRALITY_MAP — (T or F) If T, requires delivery of the centrality map to the customer.

8.1.628 SHIP_CERTIFICATE_OF_CONFORMANCE — (T or F) If T, requires delivery of a certificate of conformance to the customer.

8.1.629 SHIP_CLOSURE_DATA — (T or F) If T, requires delivery of closure measurement data to the customer.

8.1.630 SHIP_CUSTOMER_QUALITY_FORM — (text) If present, the data field specifies the form required by the customer to document the quality of the mask.

8.1.631 SHIP_DEFECT_DATA — (T or F) If T, requires delivery of defect inspection criteria and evaluation data to the customer for all defect criteria specified. This should be final inspection data unless SHIP_THRU_PELLICLE_DATA is specified, in which case it should be for final inspection prior to pelliclizing.

8.1.632 SHIP_DIE_FIT_MAP — (T or F) If T, requires delivery of a die fit map to the customer.

8.1.633 SHIP_FILM — If present, film(s) of mask(s) must be sent to customer. Indicates beginning of <films> collection. Alphanumeric data field identifies the collection to establish which collections are hierarchically affected by another. The appearance of a <films> at a lower level in the hierarchy supercedes the <films> at a higher level in the hierarchy if it has the same SHIP_FILM data field.

8.1.634 SHIP_FIELD_FIT_MAP — (T or F) If T, requires delivery of a field fit map to the customer.

8.1.635 SHIP_FINAL_POSTPELL_DIE_DB_MSK_MAP — (T or F) If T, requires delivery of the final run, post-pellicle die to database defect inspection map for the entire patterned area to be sent to customer.

8.1.636 SHIP_FINAL_POSTPELL_DIE_DB_PTN_MAP — (T or F) If T, requires delivery of the final run, post-pellicle die to database defect inspection map for the single pattern to be sent to customer.

8.1.637 SHIP_FINAL_POSTPELL_DIE_DIE_MAP — (T or F) If T, requires delivery of the final run, post-pellicle die to die defect inspection map for the entire mask to be sent to customer.

8.1.638 SHIP_FINAL_PREPELL_DIE_DB_MSK_MAP — (T or F) If T, requires delivery of the final run, pre-pellicle die to database defect inspection map for the entire patterned area to be sent to customer.

8.1.639 SHIP_FINAL_PREPELL_DIE_DB_PTN_MAP — (T or F) If T, requires delivery of the final run, pre-pellicle die to database defect inspection map for the single pattern to be sent to customer.

8.1.640 SHIP_FINAL_PREPELL_DIE_DIE_MAP — (T or F) If T, requires delivery of the final run, pre-pellicle die to die defect inspection map for the entire mask to be sent to customer.

8.1.641 SHIP_FINAL_ROT_POSTPELL_DIE_DIE_MAP — (T or F) If T, requires delivery of the final run, post-pellicle rotated die to die defect inspection map for the entire mask to be sent to customer.

8.1.642 SHIP_FINAL_ROT_PREPELL_DIE_DIE_MAP — (T or F) If T, requires delivery of the final run, pre-pellicle rotated die to die defect inspection map for the entire mask to be sent to customer.

8.1.643 SHIP_FIRST_POSTPELL_DIE_DB_MSK_MAP — (T or F) If T, requires delivery of the first run, post-pellicle die to database defect inspection map for the entire patterned area to be sent to customer.

8.1.644 SHIP_FIRST_POSTPELL_DIE_DB_PTN_MAP — (T or F) If T, requires delivery of the first run, post-pellicle die to database defect inspection map for the single pattern to be sent to customer.

8.1.645 SHIP_FIRST_POSTPELL_DIE_DIE_MAP — (T or F) If T, requires delivery of the first run, post-pellicle die to die defect inspection map for the entire mask to be sent to customer.

8.1.646 SHIP_FIRST_PREPELL_DIE_DB_MSK_MAP — (T or F) If T, requires delivery of the first run, pre-pellicle die to database defect inspection map for the entire patterned area to be sent to customer.

8.1.647 SHIP_FIRST_PREPELL_DIE_DB_PTN_MAP — (T or F) If T, requires delivery of the first run, pre-pellicle die to database defect inspection map for the single pattern to be sent to customer.

8.1.648 SHIP_FIRST_PREPELL_DIE_DIE_MAP — (T or F) If T, requires delivery of the first run, pre-pellicle die to die defect inspection map for the entire mask to be sent to customer.

8.1.649 SHIP_FIRST_ROT_POSTPELL_DIE_DIE_MAP — (T or F) If T, requires delivery of the first run, post-pellicle rotated die to die defect inspection map for the entire mask to be sent to customer.

8.1.650 SHIP_FIRST_ROT_PREPELL_DIE_DIE_MAP — (T or F) If T, requires delivery of the first run, pre-pellicle rotated die to die defect inspection map for the entire mask to be sent to customer.

8.1.651 SHIP_INSP_DATABASE_DATA — (T or F) If T, requires delivery of die-to-database inspection data to the customer.

8.1.652 SHIP_MANUAL_INSPECTION_FORM — (T or F) If T, requires delivering to the customer a copy of the manual inspection form.

8.1.653 SHIP_MEASURE_FILE_REGISTR_MAP — (T or F) If T, requires delivering to the customer the measure file registration map.

8.1.654 SHIP_PHASE_SHIFT_MEASUREMENTS — (T or F) If T, <phase_shift_measurements> must be sent to the customer.

8.1.655 SHIP_PHASE_SHIFT_REPORT — (T or F) If T, requires delivering to the customer a report of the phase shift characteristics of the mask.

8.1.656 SHIP_REGISTR_DATA — (T or F) If T, requires delivery of all registration measurements, criteria and evaluation data to the customer for all registration criteria specified.

8.1.657 SHIP_REPAIR_DATA — (T or F) If T, requires delivery of repair data to the customer.

8.1.658 SHIP_SEM_PHOTOS — (T or F) If T, requires delivery of SEM photos to the customer.

8.1.659 SHIP_SPECIAL_REQUEST — (text) If present, the data field specifies the special request of the customer.

8.1.660 SHIP_STARLIGHT_MAP — (T or F) If T, requires delivery of a defect map from the Starlight to the customer.

8.1.661 SHIP_SURF_INSP_GLASS_SIDE_MAP — (T or F) If T, the final, post-pellicle, surface inspection map of the glass side of the mask must be sent to the customer.

8.1.662 SHIP_SURF_INSP_MEASUREMENTS — (T or F) If T, <surface_insp_measurements> must be sent to the customer.

8.1.663 SHIP_SURF_INSP_PATTERN_SIDE_MAP — (T or F) If T, the final, post-pellicle, surface inspection map of the patterned side of the mask must be sent to the customer.

8.1.664 SHIP_SURF_INSP_PELL_TOP_MAP — (T or F) If T, the final, post-pellicle, surface inspection map of the pellicle on the patterned side of the mask must be sent to the customer.

8.1.665 SHIP_SURF_INSP_PELL_BOTTOM_MAP — (T or F) If T, the final, post-pellicle, surface inspection map of the pellicle on the glass side of the mask must be sent to the customer.

8.1.666 SHIP_SURF_INSPECTION_MAP — (T or F) If T, the final, post-pellicle, surface inspection map(s) must be sent to the customer.

8.1.667 SHIP_THRU_PELLICLE_DATA — (T or F) If T, requires delivery of through-pellicle defect inspection criteria and evaluation data to the customer for all defect criteria specified. This should be final inspection data.

8.1.668 SHIP_TRAVELER — (T or F) If T, requires delivery of mask traveler document to the customer.

8.1.669 SHIPPING_ADDRESS — Address for delivery of masks.

8.1.670 SHIPPING_CONTACT — Name of person to receive masks.

8.1.671 SHIPPING_EMAIL — Internet address for SHIPPING_CONTACT.

8.1.672 SHIPPING_FAX — Phone number for facsimile machine of SHIPPING_CONTACT.

8.1.673 SHIPPING_PHONE — Phone number for SHIPPING_CONTRACT.

8.1.674 SHIPPING_METHOD — Transportation method for masks, including special arrangements for off-hours and weekends.

8.1.675 SHIPPING_METHOD_USED — Transportation method used to deliver masks.

8.1.676 SIZING — (n) The amount to increase or decrease the width and height of all geometry within a pattern while fracturing. (n) is in microns and can be negative, indicating a decrease. Note that (n) results in a "one-sided" change in feature size.

8.1.677 SIZING_BORDER_RULE — (FIT, INSIDE, OUTSIDE and others on request) Describes methodology for applying SIZING at the borders of the output file and the effect on the final dimensions of the output file.

8.1.678 SIZING_RULE — (SQUARE, PARAGON, EXTEND, OCTAGON and others on request) Describes methodology for applying SIZING around corners.

8.1.679 SO_NUMBER — Alphanumeric sales order number.

8.1.680 SOFTWARE_NAME — Name of the software program, not the brand (e.g., MaskRigger or MaskWeaver, not MaskTools). If, for a given function_purpose, multiple software_program names appear, then they are alternative software tools to achieve the desired outcome.

8.1.681 SOFTWARE_REVISION — (text, including …"OR HIGHER") Revision identification, per software vendor's nomenclature.

8.1.682 START_BARCODE — (text) name of barcode.

8.1.683 START_BILLING_INFORMATION — (text) name of <billing_information>.

8.1.684 START_CD — Indicates beginning of <cd_group>. Alphanumeric data field identifies the collection to establish which collections are hierarchically affected by another. The appearance of a <cd_definition> at a lower level in the hierarchy supercedes the *entire* <cd_definition> at a higher level in the hierarchy *if and only if* it has the same START_CD data field.

8.1.685 START_CD_GROUP_MEASUREMENTS — (text) name of <cd_group_measurements>.

8.1.686 START_CD_ISO_DENSE — (text) name of <cd_iso_dense_definition>.

8.1.687 START_CD_ISO_DENSE_RESULTS — (text) name of <cd_iso_dense_results>.

8.1.688 START_CD_MEASUREMENT — (text) name of <cd_measurement>.

8.1.689 START_CD_SET — Indicates beginning of <cd_set>. Alphanumeric data field identifies the collection to establish which collections are hierarchically affected by another. The appearance of a <cd_set> at a lower level in the hierarchy supercedes the *entire* <cd_set> at a higher level in the hierarchy *if and only if* it has the same START_CD data field.

8.1.690   START_CD_SET_RESULTS — (text) name of <cd_set_results>.

8.1.691 START_CD_XY_DEFINITION — (text) name of <cd_xy_definition>.

8.1.692 START_CD_XY_RESULTS — (text) name of <cd_xy_results>.

8.1.693 START_CLOSURE_MEASUREMENTS — (text) name of <closure_measurements>

8.1.694 START_COATING — (text) name of <coating>.

8.1.695 START_DATA_FRACTURE — (text) name of <data_fracture> group.