CONFLICT MINERALS IN SEMICONDUCTORS

N-Able Group International
Ron Jones
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Conflict Minerals Background
Profits from conflict minerals found in the Democratic Republic of the Congo (DRC) have supported conflict, human rights violations and labor and environmental abuses in the region for years. Companies that use these minerals in the design and manufacture of their products and components – called downstream companies – are concerned about these abuses, and are taking action to avoid contributing to conflict in any way. The US Government is helping . . . with legislation and regulations.
Recent Events

- In early November, the March 23 Movement (M23) laid down their weapons to seek a peaceful solution.
- M23 was in existence for less than 20 months.
- M23 did not create the CM problem in the Congo.
- There remain 50+ armed groups ranging in size from thousands to dozens involved in Conflict Minerals.
Democratic Republic of the Congo & 9 adjoining states
Area: 900,000 mi² (TX+AK)
Pop: 75,000,000 – among the poorest in the world
Minerals: US$ 24 Trillion - richest of any country
Civil War: 15+ years
Deaths thru 2008: 5,000,000
Death rate: >100,000/mo
The term Conflict Minerals includes both the ores and the elements, regardless of source.

<table>
<thead>
<tr>
<th>Mineral</th>
<th>Description</th>
<th>Major uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cassiterite</td>
<td>Ore from which tin is extracted</td>
<td>Plating and solders for joining pipes and electronic circuits</td>
</tr>
<tr>
<td>Columbite-tantalite</td>
<td>Ore from which tantalum is extracted</td>
<td>Electrical components (including those used in mobile phones, computers, videogame consoles), aircraft and surgical components</td>
</tr>
<tr>
<td>Gold</td>
<td>Rare metal found in a native (pure) form and obtained as a by-product of other mining operations</td>
<td>Jewelry, electronic, communications and aerospace equipment</td>
</tr>
<tr>
<td>Wolframite</td>
<td>Ore from which tungsten is extracted</td>
<td>Metal wires, electrodes and contacts in lighting, electronic, electrical, heating and welding applications</td>
</tr>
</tbody>
</table>
Virtually every IC product contains one or more Conflict Minerals in the die, the package or both. There is no de minimis escape clause.
Conflict Minerals Legislation
Compliance/Reporting Drivers

- United States Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 – Section 1502
- Related United States Securities and Exchange Commission Final Rule on compliance with Dodd-Frank – Section 1502 – (356 pages)
- OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas – (97 pages)
Title XV of the Dodd-Frank Wall Street Reform and Consumer Protection Act

“Section 1502 requires persons to disclose annually whether any Conflict Minerals that are necessary to the functionality or production of a product of the person, as defined in the provision, originated in the Democratic Republic of the Congo or an adjoining country and, if so, to provide a report describing, among other matters, the measures taken to exercise due diligence on the source and chain of custody of those minerals, which must include an independent private sector audit of the report that is certified by the person filing the report…”
The SEC is adopting a new form and rule pursuant to Section 1502 of the Dodd-Frank Wall Street Reform and Consumer Protection Act relating to the use of conflict minerals.

Section 1502 added Section 13(p) to the Securities Exchange Act of 1934, which requires the Commission to promulgate rules requiring issuers with conflict minerals that are necessary to the functionality or production of a product manufactured by such person to disclose annually whether any of those minerals originated in the Democratic Republic of the Congo or an adjoining country. RCOI

If an issuer’s conflict minerals originated in those countries, Section 13(p) requires the issuer to submit a report to the Commission that includes a description of the measures it took to exercise due diligence on the conflict minerals’ source and chain of custody. DD

A recognized framework must be used for the due diligence process, usually “OECD Guidelines of Multinational Enterprises.” Framework
The measures taken to exercise due diligence must include an independent private sector audit of the report that is conducted in accordance with standards established by the Comptroller General of the United States. Section 13(p) also requires the issuer submitting the report to identify the auditor and to certify the audit. Audit

In addition, Section 13(p) requires the report to include a description of the products manufactured or contracted to be manufactured that are not “DRC conflict free,” the facilities used to process the conflict minerals, the country of origin of the conflict minerals, and the efforts to determine the mine or location of origin. Products not supply chain

Section 13(p) requires the information disclosed by the issuer to be available to the public on its Internet website.

Effective Date: November 13, 2012.

Compliance Date: Issuers must comply with the final rule for the calendar year beginning January 1, 2013 with the first reports due May 31, 2014. Filing
If you’re a public company and your product contains Ta, Sn, W or Au (CMs), you must file.

You must determine the source of each CM (Reasonable Country of Origin Inquiry - RCOI).

If from DRC+9 or can’t prove source, you must do more detailed Due Diligence (DD) process.

Must use accepted process for RCOI and DD.

Most companies will require a 3rd party audit.

Must report by product, not supply chain.

Must file each year by May 31, for previous year.
Stay of Execution Denied

- On October 19, 2012, the U.S. Chamber of Commerce and National Association of Manufacturers asked the U.S. Court of Appeals in Washington to “modify or set aside in whole or in part” the U.S. Securities and Exchange Commission rules governing so-called Conflict Minerals.

- In a July 23, 2013 opinion, the U.S. District Court for the District of Columbia upheld the SEC’s rule requiring disclosure of companies’ use of Conflict Minerals originating in and around the Democratic Republic of the Congo (“DRC”).
Timeline
6 months - 11 days

Year 1 - 2013
Year 2 - 2014
Year 3 - 2015

5/31/14
Y1 Report Due

5/31/15
Y2 Report Due

Ongoing
Not a one time deal – must be reported each year
Due diligence is refined over time
Compliance documents expire and need renewal
Vendors change, mines are added

This requirement is not going away
It will probably grow

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Now that industry has been broken to the bit of providing information on “Conflict Minerals”, the door is open to adding other items:

- Rubidium from Rwanda
- Selenium from Slovakia
- Palladium from Paraguay
- Rare Earths from China

Estimates are that current 3TG minerals will still not be totally in control in 10 years
Who Must File with the SEC?

- Generally any company that files reports with the SEC under Section 13(a) or Section 15(d) and for which a conflict mineral is necessary to the functionality or production of a product manufactured or contracted to be manufactured by the company.
- This likely covers all public:
  - Companies that sell electronic products
  - Semiconductor companies
  - Foundries and OSAT’s
  - Suppliers of CM inclusive materials
- Filing is done with SEC on forms SD & CMR
Any private company in the semiconductor supply chain for which a conflict mineral is necessary to the functionality or production of a product manufactured or contracted to be manufactured by the company

This likely covers all private:
- Semiconductor companies
- Foundries and OSAT’s
- Suppliers of CM inclusive materials

Though these companies will not file directly with the SEC, they will have to supply Conflict Minerals information to their public customers
Today

- Your customer’s contract contains a CM clause
- You don’t know if you’re compliant, but you sign the contract
- If anything, you might have a breach of contract

Tomorrow

- You do an analysis on your supply chain
- You file a document with the SEC
- If inaccurate, there may be major consequences
Implications of Not Filing or Perjury

- Public Companies must “File” not “Furnish”
  - Potential financial penalties by SEC
  - Potential incarceration
  - Customer may move you to backup supplier status
  - Customer or industry may blacklist you

- Private Companies
  - No SEC requirement to file
  - Public companies do need your information
  - Potential penalties if you commit perjury
  - Customer may move you to backup supplier status
  - Customer or industry may blacklist you
Audits

- An audit will be required each year unless you are positive that no conflict minerals originated in the Covered Countries (DRC+9).
- The audit may be skipped in year 1 and year 2 if your determination is “Undeterminable”.
- The required 3rd party audit only evaluates whether the SEC filer has adequately performed due diligence by designing and disseminating an appropriate inquiry process and following that process. It is NOT designed to verify content of the disclosure.
START

Does the issuer file reports with the SEC under Sections 13(a) or 13(d) of the Exchange Act?

YES → Does the issuer manufacture or contract to manufacture products?

YES → Are conflict minerals necessary to the functionality or production of the product manufactured or contracted to manufactured?

NO → Rule does not apply. END

NO → Were the conflict minerals outside the supply chain prior to January 31, 2013?

YES → NO, if newly-mined

NO, if potentially scrap or recycled

Based on a reasonable country of origin inquiry (RCOI), does the issuer know or have reason to believe that the conflict minerals may have originated in the DRC or an adjoining country (the covered countries)?

YES → Exercise due diligence on the source and chain of custody of its conflict minerals following a nationally or internationally recognized due diligence framework, if such framework is available for a specific conflict mineral. In exercising this due diligence does the issuer determine the conflict minerals are not from the covered countries or are from scrap or recycled?

NO → File a Form SD with a Conflict Minerals Report as an exhibit, which includes a description of the measures the issuer has taken to exercise due diligence. In exercising the due diligence, was the issuer able to determine whether the conflict minerals financed or benefited armed groups?

NO → Is it less than two years after effectiveness of the rule (four years for Smaller Reporting Companies)?

YES → The Conflict Minerals Report must also include a description of products that are "DRC Conflict Undeterminable" and the steps taken or that will be taken, if any, since the end of the period covered in the last Conflict Minerals Report to mitigate the risk that the necessary conflict minerals benefit armed groups, including any steps to improve due diligence. No audit is required.

END

NO → File a Form SD that discloses the issuer's determination and briefly describes the RCOI and due diligence measures taken and the results thereof.

END

END
How will the conflict minerals rule affect my business?

Some companies will need to file high-level summary disclosures while others will be subject to additional detailed reporting and auditing. Companies should evaluate each of their products to determine the extent of reporting requirements.

Start

Product contains tantalum, tungsten, tin, or gold?

Yes → Conduct inquiry into origin

Sourced from the covered countries?*

Yes/reason to believe → Conduct due diligence

No

Free of conflict minerals

Conflict-free mineral

Temporarily undeterminable** (no audit required)

Conflict-free mineral

Not conflict-free mineral

No disclosure requirements

File Summary Disclosure with SEC

File Summary Disclosure, Conflict Minerals Report, and Audit Opinion with SEC

RCOI

Due Diligence
FILING IS ON A PRODUCT BASIS
Though RCOI and Due Diligence efforts tend to have a supply chain orientation, reporting is **product focused**, not supply chain focused.

For clarity, reporting may be segmented into various products or product groups to avoid everything being lumped into one category.

Lumping typically results in the products being downgraded to lowest common category: “Not DRC Conflict Free” or “DRC Undeterminable”.

Must report every product, but **not** every supplier.
What is a Product?

- Fabless or IDM
- Foundry
- OSAT
- Materials

Integrated Circuit
Processed Wafer
Assembled Package
Gold Wire
Sputtering Target
Substrate/Interposer
# Allowed Declarations

There is NO requirement to become Conflict Free
There IS a requirement to file with the SEC

<table>
<thead>
<tr>
<th></th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRC Conflict Free</td>
<td>Allowed</td>
<td>Allowed</td>
<td>Allowed</td>
</tr>
<tr>
<td>Not DRC Conflict Free</td>
<td>Allowed</td>
<td>Allowed</td>
<td>Allowed</td>
</tr>
<tr>
<td>DRC Conflict Undeterminable</td>
<td>Allowed</td>
<td>Allowed</td>
<td>Not Allowed</td>
</tr>
</tbody>
</table>
## What is a Conflict Free IC?

<table>
<thead>
<tr>
<th>Die</th>
<th>Package</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conflict Free</td>
<td>Conflict Free</td>
<td>Conflict Free</td>
</tr>
<tr>
<td>Conflict Free</td>
<td>Not Conflict Free</td>
<td>Not Conflict Free</td>
</tr>
<tr>
<td>Conflict Free</td>
<td>Undeterminable</td>
<td>Undeterminable</td>
</tr>
<tr>
<td>Not Conflict Free</td>
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Form SD – Specialized Disclosure

- The determination:
  - DRC Conflict Free
  - Not DRC Conflict Free
  - DRC Conflict Undeterminable

- Description of RCOI and Due Diligence efforts

- Results of RCOI and Due Diligence efforts
Due diligence on source and chain of custody
Steps taken/to be taken to mitigate risk 3TGs benefited armed group
Any further steps to improve due diligence
Country of origin in the Covered Countries, if known
Smelting facilities that processed the 3TGs, if known
Efforts to determine mine or origin with greatest possible specificity
Describe products, facilities used to process them
Compliance Approaches
Supply Chain Focal Point
Smelters and Refiners

Finished Products

Raw Materials

Mine

Smelters / Refiners

iPhone

Conflict Free Smelter Program
Who are the key players?

- You
- Your supply chain – down to smelters & refiners
- Your customers
- SEC – Securities and Exchange Commission
- Auditors
Semiconductor Supply Chain

Flat Supply Chain

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Each fabless company works with their supply chain partners (foundries and OSAT’s) and others down to the smelter/refiner level.

Each company must become an expert on conflict minerals procedures and regulations.

Each company must develop some sort of tracking system.

Each company replicates work of scores of other fabless/IDM companies.
Adopt a conflict minerals company policy
Identify a conflict minerals champion and team
Become educated in details of CM compliance
Develop a tracking system (typically Excel) that:
- Reflects hierarchical structure of Tier 1, 2, 3, → SOR
- Stores supply chain structure, certificates, expiration dates, revisions, contacts, correspondence . . .
Make contact with relevant suppliers
Enter data and documents in system during process
Determine reporting structure by direct suppliers
Send Reporting Template requests to Tier 1’s
Receive completed T1 forms . . . or start follow up
Move to request/receive templates from Tier 2’s.
Move to request/receive templates from Tier 3’s . . .
Log all information and documents in your system
Do Reasonable Country of Origin Inquiry (RCOI)
Perform and document your due diligence work
Potentially have independent audit performed
Public companies file Forms SD/CMR by May 31

Time consuming, non-core and non-value add
Dodd-Frank, Title XV – Section 1502
SEC Conflict Minerals, Final Rule (356)
OECD Guidelines for Multinational Enterprises (97)
CFSI Practical Guidelines to Downstream Comp. (27)
Conflict Minerals Overview Presentations
EICC-GeSI Templates and instructions
EICC-GeSI Conflict-Free Smelter – FAQ’s (13)
Conflict Free Sourcing Institute collateral
Consulting collateral – PwC, KPMG, Deloitte, ENY …
Public filing date for CY 2013 is <7 months away

Public customers need supply chain partner information much sooner to support their own audits and filings

Individual companies working independently is very inefficient both from overlapping expended effort and long, serial time lines
Estimate of How Much Work

Depends but Significant
N-Able Group Approach

- Solution is based on LiveSource (LS), a cloud-based package designed for Conflict Minerals management.
- N-Able sets-up your supply chain structure in LS.
- N-Able works with foundries and OSATs and their partners down to smelter/refiner level.
- Approach all tiers in parallel, thus speeding process.
- Holistic view of semiconductor supply chain to identify all potential conflict mineral sources.
- Results can be shared among many fabless companies thus leveraging effort and reducing cost.
- N-Able has strong & deep semi operations insight.
# Materials Focus is Key

## FAB
- **Direct – non Conflict**
  - Si Wafers
  - Cu or Al Metallization
- **Indirect/Equipment**
  - Photomask
  - Ion Implanter
- **Direct - Conflict**
  - W or Au Sputter Targets
  - WF$_6$ process gas

## ASSEMBLY
- **Direct – non Conflict**
  - Alloy 42 Lead frames
  - Ag filled die attach epoxy
- **Indirect/Equipment**
  - Probe Card
  - Wire Bonder
- **Direct - Conflict**
  - Au bond wire
  - Au wafer bumps
  - Sn/Ag lead finish/balls
Material and Semi Sources

Fab and assembly materials

Fab materials

Assembly materials

Fabless and IDM companies

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Use of Technology
LiveSource
LiveSource Strengths

- Provides central repository for all data and info
  - Documents, expiration dates, contact info, communication history, notification structure, . . . everything for managing CM compliance
- Cloud-based with worldwide access
- Comprehends supply chain from top to bottom
- Documents RCOI and DD processes and results
- Tracks fab and assembly, thus enabling product
- Supports other compliance tasks:
  - REACH, RoHS, ITAR, ISO, Green . . .
- Enables progress tracking year to year
N-Able Group Support
What Does N-Able Group Provide

- Total project management for CM compliance
- Compliance assessment & plan development
- Support for drafting conflict minerals policy
- LiveSource supply chain set-up and user training
- Contact of key suppliers at all levels
- Logging of supplier and other info into LiveSource
- Reasonable Country of Origin Inquiry (RCOI)
- Due Diligence process and documentation
- Product Level Reporting Strategy
- Auditor selection (if required)
- Filing support
Strengths of N-Able Approach

- Provides you with a single point of responsibility for your CM compliance efforts
- Eliminates need for headcount increase or dilution of your current efforts
- Utilizes LiveSource software that is specifically designed for conflict minerals management
- Leverages work with all tiers across the entire semiconductor supply chain
- Deep understanding of semi space & requirements
QUESTIONS?

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